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NEWS SUMMARY

GENERAL

Suarez changes Spanish Cabinet

Spanish Prime Minister Adolfo Suarez yesterday carried out a big Cabinet reshuffle aimed at attracting wider support in Parliament and improving his image in the country.

The second reshuffle in five months, it had been under consideration for more than a month and was formally provoked by the resignation of deputy Prime Minister Fernando Abril Martorel.

The main changes involve the return of some critics of Mr. Suarez and distribution of some portfolios to more liberal wings of the party. Mr. Leopoldo Galvo, Sotelo, a former Minister for European Affairs, who has the confidence of the business community, has been put in charge of economic affairs. The Government's economic record has been the target of much criticism.

BUSINESS

Gold Mines index at record

GOLD reached its highest level since July 7 in London, closing \$21 up at \$672.5. Some short covering was suggested as one reason for the rise. Page 31

SILVER surged in London, influenced mainly by the rise in gold. The LME cash price closed 69.5p up at 734p. Page 33

GILTS hardened on news of the fifth monthly fall in manufacturing industry's costs. The FT Government Securities Index finished 0.19 up at 69.63. Page 34

EQUITIES put on a late rally to close 24 down at 492.0. **GOLDS** raised ahead, demand intensifying after hours on renewed U.S. support. The Gold Mines index rose 19.5 to a record 447.5. Page 34

DOLLAR lost ground, closing at DM1770 (DM1781.5). Its trade-weighted index fell to \$2.5 (82.7). Page 31

SPREADING traded quietly ahead of the banking figures. Its index was unchanged at 76.5. Against the dollar, it rose 60 points to finish at \$241.5. Page 31

WALL STREET was 6.66 down at 934.50 near the close. Page 32

U.S. INTEREST RATE rises are temporary, says Treasury Secretary William Miller. Page 5

ORDERS for U.S. semiconductors fell to the level of sales in July, the first time this year. Back Page

AUSTRALIA is considering retaliation against possible U.S. anti-trust judgments on uranium producers. Back Page

CHINA'S failure to step up oil production means it will be unable to meet export pledges to Japan, says a Japanese official. Page 4

GOVERNMENT Actuary has seriously underestimated the cost of providing index-linked pensions for civil servants, says the Centre for Policy Studies. Page 8

FIRE BRIGADES Union's new general secretary is to be Ken Cameron.

MOULINEX, French domestic appliance manufacturer, is to lay off nearly half of its 10,700 workforce. Page 26

METAL BOX, Britain's biggest can maker, is to close two factories with the loss of 1,260 jobs and warns of further redundancies. Back Page

MASSEY FERGUSON of Canada, the world's third largest farm equipment manufacturer, lost \$62.9m (£26m) in the nine months to July 31, against a profit of \$104.1m last year. Page 26; Back Page

STR, rubber manufacturing group, boosted first half pre-tax profits by £9m to £36.4m on substantial gains in all countries except the UK. Page 22; Lex, Back Page

METAL CLOSURES Group, metal and plastic products maker, reports first half taxable profits £220,000 down at £2.56m. Page 24

Call for aid

West German Chancellor Helmut Schmidt urged OPEC and Communist countries to provide more aid for Third World nations hit by soaring oil prices. Back Page

Jet crashes

An American McDonnell-Douglas Hornet combat plane, star of the recent Farnborough air show, crashed after take-off in the UK. The crew of two were taken to hospital.

Students riot

About 1,500 black students rampaged through streets in Kimberley, South Africa, stoning police and breaking into houses. Police charged 19 with damaging property.

Black unions

In a breakthrough for black trade unionism, Ford's South Africa subsidiary agreed to the appointment of full-time shop stewards for company workers in three unions, one of them unregistered. Page 4

War games

NATO troops began a big exercise in Western Europe, aimed at testing Britain's ability to reinforce the West German front, while Warsaw Pact troops started exercises near the Polish border. Page 2

Androsch may go

Austrian Finance Minister Dr. Hannes Androsch is expected to resign all Government posts today after allegations about his business interests. He had been regarded as the likely next Chancellor. Page 2

Publisher dead

Philip Dosse, 55-year-old publisher and proprietor of Hanser Books, was found dead at his London home. Last week his group of seven arts magazines ceased trading and Dosse said there was not even enough money to pay staff.

Rebels warned

Sixteen Labour Right-wing rebels were given a month to withdraw a threat to stand against Labour Left-wingers at the next general election or face expulsion from the party. Page 8

Briefly...

More than 100,000 paid homage in Tehran to those killed in anti-Shah demonstration two years ago.

Two men were sentenced at the Old Bailey to three years' jail for killing a woman during an exorcism.

Chinese Government has reduced ceremonies for visiting heads of state, to save time.

About ten British tourists were injured in a road accident near St. Omer, northern France.

CHIEF PRICE CHANGES YESTERDAY

(Prices in pence unless otherwise indicated)

RISERS	FALLS
Treasury 12pc 1896 192 + 1	Int. Mining Corp. 83 + 10
Treas. 13pc 04-08 2100 + 1	Postle 302 + 32
Aeronautical & Gen. 555 + 25	Radcliff 235 + 24
Anal. Distilled Pds. 44 + 3	Target Petroleum 32 + 8
Bramall (C.D.) 54 + 5	Venturepost 840 + 53
Dorad 54 + 5	
Electrocompounds 734 + 12	Arrow Chemicals 221 - 54
Haynes Publishing 128 + 5	Cornell Dresses 49 - 3
Horizon Travel 298 + 8	Gray Electronics 63 - 5
Laurence Scott 66 + 6	Danish Bacon "A" 108 - 8
Lex Service 88 + 4	Esperanza 112 - 21
Max. Ship Canal 227 + 10	Hambros Bank 533 - 3
Moran (C.) 24 + 3	Home Churn 94 - 8
St. George's Landry 65 + 19	Home Counties Newspapers 73 - 5
Double Eagle 610 + 190	Hongkong Land 136 - 12
Petroleum 380 + 15	Metals Box 276 - 10
Warrior Resources 380 + 100	Rockie & Colman 200 - 10
Cons. Gold Fields 572 + 25	Thorn EMI 372 - 5
Free State Geduld 233 + 7	Wheelock Marden 43 - 54
Geometals 82 + 7	North Broken Hill 190 - 6

Industry raises its prices more slowly as demand falls

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

BRITISH manufacturing industry is raising its prices much more slowly than at any time in the last two years in the face of the tight constraints of falling demand and the need to reduce excessive levels of stocks.

The wholesale price indices, published yesterday by the Department of Industry, show some relief is being provided by raw material and fuel costs which have hardly changed since the spring.

Unit labour costs, around two-thirds of the total, have still, however, been rising rapidly; many companies have faced increases of between 15 and 20 per cent over the last year.

Consequently, the slowdown in price rises has generally been at the expense of reduced profit margins, as has been suggested by recent poor results from leading companies such as ICI.

The implications for the consumer are more comforting. The retail prices index—due out on Friday—is expected to confirm the recent trend of monthly increases of less than 1 per cent a month. The 12-month rate of increase, 16.9 per cent in July, is, however, likely to remain at about this level, or only slightly below.

The squeeze on producers as a result of the recession has been indicated for some time by the Confederation of British Industry and FT surveys of industrialists' price expectations.

The result was that in August the output price index for manufactured products increased by less than 1 per cent to 203.7 (1975=100). The three-monthly rate of increase in this index has slipped from 3.9 per cent in May to 2.4 per cent last month. The 12-month rate of increase was 15.1 per cent last month compared with about 16 per cent in July.

There have been wide differences between manufacturing sectors. Textile prices have increased by only 1.8 per cent in the last three months, while prices of metal manufacturing products have risen by less than 0.8 per cent.

The slowdown in growth is affecting raw material costs, and there has recently been a fall in the world prices of many commodities, such as copper. In addition, the rise in the value of the pound on foreign exchange markets has lowered the sterling cost of imported raw materials.

The cost of materials and fuel bought by manufacturing industry dropped by 1 per cent in August to 201.3 (1975=100), which was slightly lower than in April. Over the six months to August this index rose by 1.9 per cent compared with an increase of 16.9 per cent in the previous half-year. The 12-month rate of increase in August was just over 19 per cent.

Continued on Back Page

WHOLESALE PRICES (1975=100)

	Materials and fuel purchased	Output (home sales)
1979 1st	153.4	161.6
2nd	163.3	168.0
3rd	169.9	176.4
4th	183.9	181.8
1980 1st	197.2	191.4
2nd	201.3	199.0
3rd	201.1	201.0
4th	201.8	202.8
5th	201.3	203.7

* Provisional.
Source: Department of Industry.

Shop spending less than estimated

BY DAVID CHURCHILL AND PETER RIDDELL

SPENDING in the shops has been much lower than previously thought in the last few months, in spite of the hopes created by extensive price-cutting campaigns in many stores.

Revised Department of Trade figures yesterday show that the volume of retail sales fell by 1.7 per cent from June to July to 99.0 (1976=100 seasonally adjusted).

This compares with an original estimate of 101.0. The figures for the three years 1977-79 have been revised downward by about 1 per cent but the revision has been much greater for this year. The volume of trade so far this year is estimated at 1 per cent less than previously thought, with an even lower level of sales in recent months.

Consequently the decline in spending this summer has been greater than previously estimated, with volume of sales from May to July roughly 21 per cent lower than in the previous three months.

The July figures suggest a particularly sharp drop in sales of food, though some recovery in trade in clothing and footwear shops.

Mr. Richard Weir, director of the Retail Consortium, which represents many store groups, commented yesterday that the July figures were in line with recent reports from retailers that vigorous price-cutting was not leading to a significant boost in sales.

While large numbers of shoppers have attended the summer sales, not as much as the money has been spent as was thought.

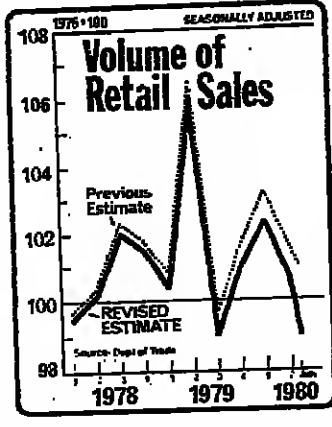
Mr. Weir believed it likely that the August and September figures would show the same low level of trade.

Not all retailers have had a bad time. Mr. David Johnson, chief executive of Rumbelows, the 400-store electrical goods chain, said that sales of electrical goods had been "very good" for the past two months.

"Last week was our best week for sales since April," he said. Sales were 45 per cent up on the corresponding week last year, though that was a particularly bad week in 1979.

The John Lewis Partnership's total sales were 17 per cent up on a year before in the week ending August 30, against a sales target of 14 per cent for the half year.

The West End department store Selfridges also reports that trade has been much improved over the past month. The weakness in some areas



Ford UK chairman to head CBI

By John Elliott, Industrial Editor

THE JOB of leading the Confederation of British Industry for the next five years has gone to Sir Terence Beckett, 56, chairman and chief executive of Ford UK. He is to take over at director general on October 1 in succession to the late Sir John Methven and will immediately become involved in deciding how to cope with industry's growing concern about some aspects of the Government's economic policies.

His successor at Ford is to be announced today. Mr. Sam Toy, the sales director who has been with the company since 1948, as is expected, the appointment is made from the ranks of existing members of the UK Board.

At Ford Sir Terence was paid approaching £90,000 last year, and also received fees for non-executive directorships of ICI and the Economist Newspaper. He is giving up all these posts for a CBI salary thought to be around £50,000 a year. This will be topped up with a package deal which includes early payment of his Ford pension so that he will not lose any income.

Sir Terence was chosen from a short list of about six candidates drawn up by Spencer Stuart, headhunters, who initially discussed the job with about 100 people.

Some leading figures, such as Sir Peter Parker of British Rail, were not interested and it was initially thought by the CBI that Sir Terence would also not be available. Yesterday he admitted he rejected the first approach. But he later agreed to let his name go forward and was chosen as the front runner by Sir Ray Pennock, CBI president, and other senior industrialists, shortly after the short list was delivered to the CBI's Centre Point headquarters earlier this month.

In the past, Sir Terence, whose brother is chief executive of British Sugar, has turned down approaches from Ministers looking for chairmen for BL and for various nationalised industries.

It has been chairman of Ford UK since 1976 and has been growing increasingly concerned about the fate of British industry, its lack of professionalism, and what he calls its "general ineffectiveness."

It was this concern that persuaded him to take the CBI job for five years, after which, he said yesterday, he might well want to return to the manufacturing industry. Profile, Page 8

Soviet Union has helped Poles with big loans

BY CHRISTOPHER ROBINSKI IN WARSAW

THE Soviet Union has helped the ailing Polish economy with hard currency credits worth \$550m (£220m) since last May, a Government Minister revealed yesterday.

It is believed that \$150m of this was arranged early last week after the signing of an agreement ending the strikes on Poland's Baltic ports.

The strikes and a harvest worse than expected meant the Minister said, that Poland would not achieve its \$370m hard currency trade surplus target for this year. But the Minister still expected that there would be a surplus.

As new figures emerged showing the cost of Poland's worst industrial unrest in 10 years, Mr. Stanislaw Kania, Poland's new Communist Party leader, visited Gdansk to address party workers. The visit was seen as an indication that the new leadership would meet its side of the bargain struck with the port workers.

In Warsaw, at a Press conference, Mr. Henryk Kisiel, the new Planning Commission Chief, stressed that there was no question at this stage of Poland asking for a moratorium on payments of its \$20bn debt. He praised the bankers who had extended loans to Poland in recent months "for their wise and courageous decision," and said that the country would not default on any of its international obligations.

Mr. Kisiel said that the new pay agreements would cost 90bn zlotys, raising the country's wage bill by 10 per cent. (It is hard to translate this estimate into Western currencies. Poland's official exchange rate is 72.36 to the pound, while the unofficial, blackmarket rate is up to 270 to the pound.)

Additional social benefits would cost another 40bn zlotys. Finding the consumer goods to supply this additional demand was the crucial task of Poland's planners in the coming year, he said.

One of the ways of doing this was to reduce investments, and "no project is sacred," Mr. Kisiel said, and that the strikes had cost around 30bn zlotys worth of lost production and that industrial production in August was about 10 per cent down on the same month last year.

Meanwhile, he said, the grain

Electricity supply jobs to go

BY JOHN LLOYD, LABOUR CORRESPONDENT

PLANS FOR a dramatic cut in capacity and employment in the electricity supply industry will be presented to unions today.

The Central Electricity Generating Board, which has seen a 7 per cent drop in demand in the first half of the current financial year and expects a bigger fall in the second half, wants to cut more than 3,000 MWs from its net capacity of about 57,000 MWs, and to shed more than 3,000 jobs, as quickly as possible.

This might mean either closing or "mothballing" up to 20 power stations, mainly small coal- or oil-fired stations all over the country which are relatively inefficient producers of electricity.

The cuts in capacity and manpower are more than double those mooted by the board six months ago, and it is unlikely that alternative employment can be offered to the displaced workers within the system.

The CEBG has kept a number of small, inefficient coal-fired stations on line over the past 18 months in an effort to cut down on expensive, imported oil. However, the scale of the drop in electricity use—likely to worsen in the months ahead—has forced the board radically to revise its plans.

It is expected that the CEBG will ask for a two-part programme today—the first would be a decommissioning of the oldest stations as soon as possible, while the second would involve "mothballing" a further tranche of stations, retaining them for future use.

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EUROPEAN NEWS

The world according to Count Otto Lambsdorff

BY JONATHAN CARR IN BONN



Count Otto Lambsdorff, W. German Economics Minister: far from concerned that he may be catapulted out of office.

IT IS not easy to catch the flying figure of Count Otto Lambsdorff, the West German Economics Minister. If he is not touring China, or chairing a meeting of the International Energy Agency (trade and energy are two responsibilities of his "super-ministry"), he is likely to be on the campaign trail. The general election is less than a month away, and Count Lambsdorff's liberal Free Democratic Party—the junior partner in the Bonn coalition with the Social Democrats—is fighting for its life. At the last election the Free Democrats gained only 7.9 per cent of the vote—and if they gain less than 5 per cent they will get no seats in the Bundestag.

Tracked down in a Duesseldorf restaurant, Count Lambsdorff seemed far from concerned that he might soon be catapulted out of office. He ranged over East-West relations, British energy policy, the European Community and domestic affairs with the air of a man who expects to be grappling with such problems for a long time to come.

Renowned for his directness, he lost no time in despatching one topical question: relations with the East. Poland had just been given a DM 1.2bn (£281m) commercial credit, a third of it guaranteed by the Government, and now Yugoslavia wants a total loan from West Germany of DM 3bn. Was Bonn ready to relax its rules under which financial credits could be state-backed only if they helped to secure raw materials supplies for the federal republic? The answer was no. If Yugoslavia produced a suitable raw materials project, Bonn would consider it. But so far, Count Lambsdorff, was not aware of one. The aim should be to help Yugoslavia—a developing country—internationally, for example through the World Bank or perhaps the European Investment Bank.

If the West German Government were to depart from this principle, political as well as financial problems would ensue. Mr. Alexei Kosygin, the Soviet Prime Minister, had asked him how the state would guarantee trade with China. The answer had been that it would do so on the same basis as with any

other country, including the Soviet Union. The Chinese themselves had not been too happy with this message. Count Lambsdorff recalled, but it did no good to raise false expectations. His recent visit to China had confirmed that trade would most probably develop mainly on the basis of Chinese raw materials, which Germany greatly wanted, in return for German industrial goods.

As for Soviet trade, Bonn would stick to its promise not to take business from Moscow which U.S. firms lost because of the restrictions. President Jimmy Carter imposed after the Soviet invasion of Afghanistan. But, he added more cautiously, it had always been necessary to make clear to the U.S. that trade with the Soviet Union and Eastern Europe played a bigger role in the West German economy than it did in the economy of the United States.

Turning to Western Europe, Count Lambsdorff expressed his support for the economic philosophy of Mrs. Thatcher, Britain's Prime Minister. He was not sure whether the

British Government's actions would be enough to counter what he felt were years of misplaced policy based on Keynesian theories, an outmoded trade union structure, and, in many cases, "lousy British management." But there was no fundamental reason why the British with their abilities and natural resources, should not do as well economically as the Germans.

Did the West Germans want major changes in Britain's energy policies? The answer, perhaps surprisingly, was no. There had been a time when the Bonn Government complained about the high price of British oil. Now Bonn merely demands that Britain not lead a new round of price increases. Then again, Count Lambsdorff agreed he had had some reservations about the British Government's ways of promoting North Sea exploration—but his own officials had talked him out of them.

The only major request to Britain was for increased oil-sharing efforts in times of crisis. But was not Britain committed under International Energy

Agency rules to such a policy—when a trigger indicating oil supplies had fallen below a particular level was set off? Yes, Count Lambsdorff agreed, but perhaps Britain could do a little more for its European partners to see that the trigger point was not reached.

In any case, he had long been a firm believer that British energy and the question of change within the Common Agricultural Policy could be linked. Perhaps they could be when the French presidential elections were out of the way early next year and the debate began on the European Community's farm policy, the budget and enlargement. No one, he said, should be under any illusions. The French were making absolutely clear that the basis of the Common Agricultural Policy was not up for discussion—only changes, not reform, which would help to deal with the problem of surpluses. One thing was certain. The basis of 1 per cent value added tax for financing the Community budget must not on account be exceeded, not even if a solution on farm policy

were found which would cost 1.1 per cent of VAT.

And who on the West German side in a new cabinet was going to see these changes in farm policy through? The answer is Count Lambsdorff's Free Democrat Party friend, Herr Josef Ertl—who has been Farm Minister for 10 years and had never actually resigned, despite several threats to do so. Count Lambsdorff did not think much of the question of whether he might like to include agricultural policy in his Economics Ministry. Nor did the Social Democrats want the Farm Ministry, despite their complaints about the Common Agricultural Policy. Herr Ertl should stay.

So there would be no major cabinet changes if the Social Democrats and Free Democrats win on October 5? The answer, as Count Lambsdorff glanced at his watch and rises to leave, is diplomatically but clearly phrased. Chancellor Helmut Schmidt, he says, is not one who willingly sees major changes among those around him who hold responsible positions.

Tempestuous four months ahead as Soviet Union stands in the dock

BY DAVID TONGE, DIPLOMATIC CORRESPONDENT

FROM TODAY for much of the next four months, the Soviet Union will be standing voluntarily in the dock, publicly discussing its record on human rights and defending its role in Afghanistan. It will do so aggressively, for lined up beside it will be 34 other countries from the Warsaw Pact, the North Atlantic Treaty Organisation and Europe, outside the pact. The blocs at least, will be trying to prove to the jury of world opinion that they are more innocent than their opponents.

The occasion which draws together states ranging from the Vatican to the Soviet Union and from San Marino to the U.S. is the second meeting to review the Helsinki Final Act. That document was signed five years ago. Its continuing relevance was shown only ten days ago when Polish strikers insisted on publication of the Act in Poland as a condition for returning to work.

The Final Act was the fruit of two decades of intermittent discussions between East and West and three years of intensive negotiations involving the

U.S., Canada and all the European states except Albania. Its result is a document formally recognising the post-war division of Europe and setting out the principles on security, economic exchanges and human rights which all signatories agree to observe.

Now preparations for the review conference are to start this morning in Madrid and are expected to last about a month. The main conference, also in Madrid, is due to begin on November 11. Delegates forecast that it will carry on to Christmas, go briefly into recess and then wind up about a month later.

The omens are poor. The Americans and the British have said they will use the Madrid meeting to "raise the Afghanistan issue and to challenge the Soviet's performance and all participating countries' performance in the human-rights area," as Mr. Edmund Muskie, the U.S. Secretary of State, put it.

The Russians are expected to reply, in kind, raising such issues as Northern Ireland, the British French actions in Vanuatu (formerly the New Hebrides) and the "human

What the diplomatic jargon disguises

Five years ago 35 States in Europe and North America signed in Helsinki a document confirming the post-war division of Europe. The States also agreed on principles of human rights and how they should treat each other.

The document now widely known as the Helsinki accord, has become obfuscated with jargon. It is the Final Act of the Conference on Security and Co-operation in Europe. It contains four "baskets" as the groups of subjects have become known. It also involves, as a diplomat might say, CBMs: a CDE

and a CMD and D.

The Act itself contains 10 principles governing relations between States. These range from refraining from the threat of force to respecting the inviolability of frontiers and human rights.

BASKET I of the Act contains the 10 principles as well as a document on confidence building measures (CBMs) such as prior notification of military manoeuvres and exchanging military observers.

BASKET II covers co-operation in the field of economics, science and technology and

existing borders.

The resulting conference on security and co-operation in Europe led to a bargain. The West traded the "inviolability of frontiers" in return for gaining, and giving, the right for each country to monitor human rights developments elsewhere.

That all 35 European coun-

tries taking part in the conference had insisted on the right of veto meant that countries like Malta were able to impose undertakings on Mediterranean security on the conference.

Yugoslavia insisted that signatories should conduct their relations with all other states in the spirit of Helsinki—a point contained in the Final Act and explaining why the West argues that it has the right to raise developments in Asia at a conference on Europe.

Moscow remains involved in the Helsinki process not just because of its concern for the fixing of borders but also because it likes to be seen sitting on equal terms with the West and wishes to emphasise that, at least in Europe, political détente has been achieved.

It is calling for this détente to be followed up in the military sphere.

The West sees several advantages in supporting the Final Act. These include the right to raise such matters as human rights and Afghanistan. Western diplomats emphasise the value attached to the Act by countries such as Hungary.

The diplomats claim that in the run up to the Belgrade and

Madrid meetings Moscow has tended to be more punctilious about observing the human rights provisions of the treaty.

While the group set up in Britain to monitor observance of the Final Act is headed by Lord Caccia, a former head of the Foreign Office, those in Eastern Europe are headed by human rights activists. Their attempts to demand respect for the Final Act have often led to their arrest. But they still believe, as do the Polish workers, in the value of the Act. What they question is the West's willingness to insist on the Act's enforcement.

Delegates generally expect the preparatory conference to be low-key.

It remains to be seen whether what diplomats call the "atmospheres" and "climates" of the conference will allow the delegates to proceed from acrimony over the past to proposals for the future. In the field of security new proposals which may be tabled include suggestions for more interchange of military observers and, more controversial, for further disarmament conferences.

The French, with partial and

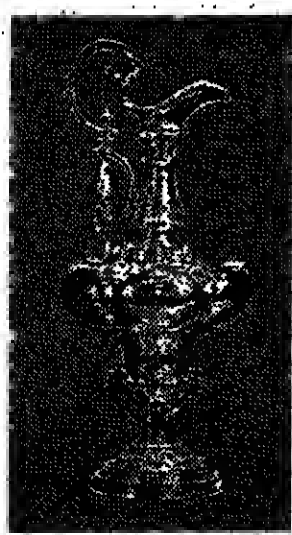
grudging support from NATO are proposing a conference on disarmament in Europe. They would like to define Europe, as Gaullists and school textbooks do, as stretching from the Atlantic to the Urals. The Final Act only requires notification of manoeuvres up to 250 kms inside the Soviet Union.

In the economic field, the West is pressing for more commercial information from Comecon, while the East would like to follow up recent conferences on science and the environment with one on energy. At the moment this suggestion is resisted by European Community countries.

On human rights the West will be putting forward proposals to speed up unification of families, pressing the Eastern bloc to speed up the issue of passports, and urging the improvement of working conditions for groups such as journalists.

Finally, the Madrid meeting will have to decide if, when and where to hold a further conference. But with Madrid like Belgrade expected to be tempestuous, few people are suggesting that it could be a case of third time lucky.

For almost 20 years, all America's Cup winners have chosen the same vital piece of equipment.



The America's Cup.

The America's Cup will always be the ultimate symbol of yacht-racing supremacy.

Two highly trained crews drawing on all their skill, teamwork and experience; battling it out over a seven-race series in the two most competitive 12-Metre yachts in the world.

Battles that America have never lost, despite the 130 years of competition and 23 separate challenges.

The Cup was first brought home to the USA in 1851. The schooner "America" beat 14 other vessels in a race around the Isle of Wight, held as part of the celebrations of the first World's Fair.

In 1857, the owners of "America" deeded the Cup to the New York Yacht Club, on condition that it would forever be placed in international competition and that this would be "friendly competition between nations."

The deed also laid down the rules and regulations governing the course, boats and equipment. Rules and regulations which,

even today, can only be changed by application to the Supreme Court of the State of New York.

In the following 80 years, the New York Yacht Club accepted, raced and defeated

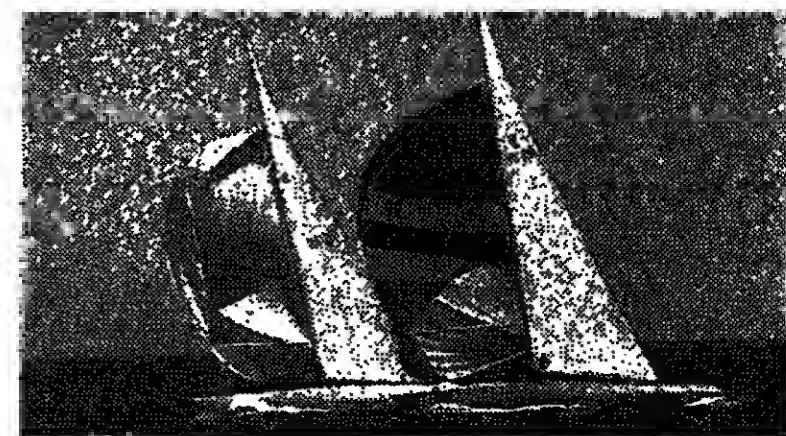
16 challengers for the Cup, perhaps the most notable being those sponsored by Thomas J. Lipton, the tea millionaire, who tried no less than five times to take the Cup back to England. Alas, his five boats—Shamrocks I-V—suffered the same fate as the rest.

After the intervention of World War II, the number of challengers capable of building a J-class boat dwindled alarmingly, and for a

while it seemed as though the Cup would never be raced for again. But in 1956, the Royal Yacht Club of Great Britain, indicated that it would challenge again if a match could be arranged in the 12-Metre class.

An application to the Supreme Court was made; the deed was modified, and the challenge was on.

But despite the changes, the result of



America's Cup action.

the match was exactly the same!

The rules governing the construction of a modern 12-Metre yacht are very simple, yet very restrictive and therefore produce yachts which are very similar in shape.

Little wonder then that latter-day 12-Metre designers have experimented with new construction

techniques, and exhaustive computer-evaluated tank testing, striving to find the perfect balance between weight,

strength, efficiency and reliability.

Attempting to give their crews a significant advantage.

However, for defending America's Cup crews it has not been necessary to change one vital piece of equipment for almost 20 years.

The watches that they all

wear. Rolex Oyster Submariners. Painstakingly assembled by hand, their reliability is guaranteed even under the most testing conditions (they are Official Swiss Chronometers).

The unique Oyster case is as hard to get into and as impervious to shocks as its name suggests. The "Triplock"

winding crown screws down to

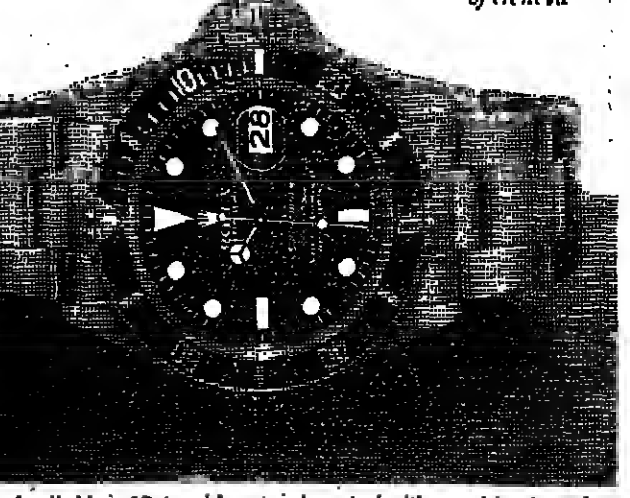
provide an impenetrable barrier against dust, dirt, and water to a depth of 200 metres.

Qualities which are recognised and appreciated by every crew member who competes in the America's Cup.

Because they all know that this particular contest proves one thing more than any other.

Second best is not enough.

ROLEX of Geneva



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OVERSEAS NEWS

Zhao Ziyang's long march to the premiership

BY TONY WALKER IN PEKING

MR. ZHAO ZIYANG, China's new Prime Minister, believes in hard work and modern methods of economic management. It was noticeable at sessions of the National People's Congress (China's parliament) that he spent more time bent over his papers than other senior colleagues who were content to sit quietly listening to proceedings. Mr. Zhao—pronounced "Jow" (the sound of "now") and "Zeeyang" (the American zee)—conveys a sense of vigour and confidence.

Perhaps, more important, he enjoys the patronage of Mr. Deng Xiaoping, the most powerful figure in the Communist hierarchy, who has spent the past year or so manoeuvring his protégés into important office.

Unlike Chairman Hua Guofeng, the outgoing premier and a virtual unknown, when he was elevated to the premiership in 1976, Mr. Zhao is a national figure who has enjoyed a surge of publicity in the past year. In fact, it could be said that his rise has been steadily stage-managed by Mr. Deng's forces. First, his efforts in Sichuan received favourable publicity in the Chinese Press. Mr. Zhao was brought permanently to

Peking in February this year, after the Communist Party Central Committee appointed him to the standing committee of the Politburo, the small group which effectively rules China.

At this point, Mr. Deng began letting it be known that Mr. Zhao was in charge of the state apparatus. Then, in June, Mr. Hu Yaobang, general secretary of the Communist Party Central Committee, hinted in an interview with Yugoslav journalists that an important change in state leadership was on the way. In the meantime, foreign diplomats had been told privately that Chairman Hua was likely to relinquish the premiership.

Finally, it was left to Mr. Li Xiannian, the veteran party official to confirm publicly in an interview with the New York Times in July that Chairman Hua and five vice-premiers, including himself, were resigning their state jobs. By this stage, the message would have spread far and wide in China that there was to be a new prime minister. Mr. Zhao's appointment has been a very Chinese process, carried out with some subtlety.

Through it all, Mr. Zhao has been visible, but not too visible. He has met his share of visitors, but has not overdone it. Most important ceremonial tasks have been left to Chairman Hua. No doubt, the new premier has

been preoccupied with preparing for the Congress, which has embraced the progressive policies he followed in Sichuan. In effect, the Congress has turned Mr. Zhao's provincial policies into national ones.

What are the Chinese people getting in their new premier? As with many officials of his generation, information about Mr. Zhao is sketchy. He was born to a well-to-do family in Henan province, central China, in 1918. He joined the then underground Communist Party when he was 20 and was an activist for the next dozen or so years until he was posted in 1950 to Guangdong province, south China, after the Communist triumph.

He worked his way through several administrative jobs until his appointment in 1956 as political commissar in Guangdong's People's Liberation Army provincial command—an important military and administrative party position. In 1965, he was made first secretary in charge of provincial affairs.

Mr. Zhao was not able to enjoy his appointment as provincial leader for very long. In 1968, along with just about everyone else in authority in China, he was criticised at the outset of the Cultural Revolution. He was purged the next year, and although he is said to have been rehabilitated by

the late 1960s, he re-emerged only in 1971 as a party official in Inner Mongolia. That could hardly have been regarded as a promotion.

Nevertheless, by 1974 he was back in Guangdong as first party secretary. In 1975, he was posted as provincial boss to Sichuan, apparently at the urging of Mr. Deng, who had himself been recently rehabilitated. The Sichuan appointment was to provide the springboard for Mr. Zhao's rise to national prominence. The province was in a shambles after the Cultural Revolution, and in the three years up to 1975, it had achieved remarkable results. In those years, according to local officials, the annual growth rate was 22 per cent.



Zhao Ziyang

Mr. Zhao's reforms included encouraging local peasants to cut down the number of crops each year, thereby increasing productivity and causing less waste. He also overhauled industry, instituting a system of self-management which led to sharply increased productivity. People in Chengdu and Chongqing, Sichuan's largest cities, speak approvingly of his stewardship.

In 1978, a most important pointer to Mr. Zhao's rise through the party was given when he accompanied Chairman Hua to Romania, Iran and Yugoslavia. Systems of economic management in the latter were influential in some of the reforms now being instituted in China. It was about this time

that he began appearing in Peking in connection with important party matters. He was appointed an alternate member of the Politburo in August 1977, and a full member a little more than a year later.

Mr. Zhao is likely to have a busy time in his first months as Premier. One of his first visitors will be Mr. Robert Muldoon, New Zealand's Prime Minister, who arrives this week. But Mr. Zhao Ziyang, in the spring of his prime ministership of a quarter of the world's people, is likely to be preoccupied by rather bigger questions, than the price of New Zealand lamb chops.

China 'unable to meet oil export commitments to Japan'

BY RICHARD C. HANSON IN TOKYO

CHINA'S OIL production, which had been expected to rise rapidly enough to sustain a doubling of its annual shipments to Japan by 1982, is now expected to stay flat for several years, according to a Japanese trade official who has just returned from Peking.

Mr. T. Yano, Vice-Minister at the Ministry of International Trade and Industry, estimates that, because of the shortfall, China will have to ask to be "excused" from supplying all the 9.5m tons of oil it was due to ship to Japan in 1981 under

a two-way trade agreement. An agreement to ship 15m tons of oil in 1982 has become completely unattainable. China is, however, expected to fulfil its undertaking to ship 8m tons of oil to Japan during 1980.

The reason for China's failure to step up oil production is that exploration has been slow to get under way in the offshore areas (such as Pohai Bay in north-east China), while production from onshore fields is proving hard to increase.

More than 90 per cent of China's oil production is con-

sumed domestically, with the remainder (some 10m tons per year) being shipped to Japan and other Far Eastern countries.

Oil consumption in China is rising steadily as the economy expands, with the result that amounts available for export are apparently tending to diminish.

China could cease oil exports altogether if there are further delays in bringing offshore areas into production or if exploration in the offshore area fails to yield results. Explora-

tion in Pohai Bay is being conducted on a joint venture basis by China and Japan, with drilling due to get under way next month.

China's oil production problem undermines one of the basic premises of the eight-year private level economic co-operation agreement signed in 1978. That pact, presented with much fanfare at the time, calls for \$30bn (£8.3bn) in two-way trade. Oil, followed by coal, are the two main Chinese exports items, while Japanese business provides large amounts

of plant and machinery.

The Japanese side has already sold a substantial part of that equipment. China's exports were expected to increase in the latter years of the agreement after Japanese-financed oil and coal development projects came on stream.

More emphasis may now have to be placed on coal. The Japanese are also exploring other possible means of increasing imports from China, such as joint development of non-ferrous metals. There is one tentative idea to develop

Anchong copper mine in the north-east province of Anhwei. It appears possible that copper exports could eventually take up some of the "slack" likely to be caused by the stagnation of oil exports.

Mr. Toshio Doko, chairman of the private level Japan-China Association on Economy and Trade, today begins two days of regular trade talks in Peking, with the oil problem high on the agenda. Under the original agreement, oil import levels for 1983-85 are to be negotiated by March next year.

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Lee pessimistic over Singapore industry

NEW DELHI — Mr. Lee Kuan Yew, Singapore's Prime Minister, restated yesterday that Singapore may have been unwise to get into the petrochemical industry, and added: "We have to get out of it."

Mr. Lee said at the end of the Asian and Pacific Commonwealth Conference that in 1978, Japan had identified 13 critical industries, including petrochemicals.

Lower-wage countries and high oil prices were squeezing the Japanese from world markets in these industries, prompting them to cut down on these sectors and transport them to South Korea, Taiwan and Singapore, Mr. Lee said.

"We have entered the petrochemical industry as a consequence. But looking ahead to the 1990s, I am wondering whether we were wise, because we will be squeezed by the middle end of that decade."

The advantage for petrochemicals would go to oil-producing nations like Malaysia and Indonesia, he added.

Kathryn Davies adds from Singapore: Mr. Lee's remarks are a major surprise here, coming so soon after the official ceremony inaugurating construction on the new petrochemical complex.

The first phase of the complex, scheduled for completion in mid-1982, provides for a \$1bn cracker drawing naphtha and liquid petroleum gas feedstock from Singapore refineries.

Barely six weeks ago, Singapore's Finance Minister, Mr. Hon Sui Sen, said the construction site on an island off the Singapore mainland would "be a hive of construction activity."

Officials from the Economic Development Board have been quick to deny what they said were rumours from Delhi over the past few days.

Suggestions that the complex would take more than 10 years to break even have obviously worried Ministers.

Israeli plan to demilitarise the West Bank

By David Lennon in Tel Aviv

A PROPOSAL to demilitarise part of the West Bank and limit the Israeli military presence in other sections of the territory provided Jordan joins the peace talks and agrees to take parallel steps—has been made by Mr. Ariel Sharon, Israel's Agriculture Minister.

This is one of the ideas which the Cabinet's arch-hawk who is the driving force behind the Government's Jewish settlement policy in the occupied territories, presented to Mr. Sol Linowitz, U.S. special Middle East envoy, during his visit to the region last week.

According to Israel Radio, Mr. Sharon also said that if the authorities ruling the proposed Palestinian autonomy areas in the West Bank and Gaza undertook to prevent terrorism, Israel would give up its demand to control internal security in these areas.

Reuter adds from Paris: Egypt and Israel must restore a climate of confidence and reach broad agreement on the vital question of Jerusalem before talks on the autonomy of Palestinians on the West Bank and Gaza can make headway, Dr. Hosni Mubarak, Egyptian Vice-president, said.

Assad in talks on union of Libya and Syria

President Hafez Al-Assad of Syria flew to Libya yesterday for summit talks with Col. Muammar Gaddafi, that are expected to lead to the formal union of the two countries and the strengthening of the radical Arab camp. Reuter reports from Beirut: The countries are 800 miles apart, but the merger plan has been interpreted in both their capitals as a way of ending Syria's isolation in the front line against Israel, and of strengthening opposition to the U.S.-sponsored Camp David accord.

'Political solution' call

The heads of Government of the 16 Asian and Pacific Commonwealth nations yesterday called for political solutions in Afghanistan and Kampuchea that would leave both countries free from outside interference. Reuter reports from New Delhi: The conference also declared that a Middle East settlement recognising the rights of the Palestinians was urgently needed.

S. Korea forecast

South Korea's growth rate will fall to about 3.2 per cent in 1980 the lowest for 17 years—the semi-official Korea International Economic Institute said yesterday. Reuter reports from Seoul.

Ford S. Africa accepts black shop stewards

BY BERNARD SIMON IN JOHANNESBURG

IN AN important breakthrough for black trade unionism in South Africa, Ford's local subsidiary has agreed to the appointment of full-time shop stewards to represent the company's workers.

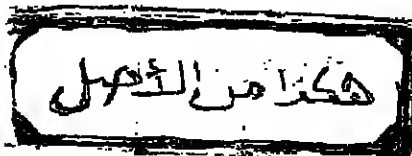
An agreement between Ford and three trade unions, one all-white and the other two representing black and mixed-race workers, provides for six full-time and 20 part-time shop stewards to negotiate with management on wages, conditions of employment and grievances. The full-time stewards will work under the authority of their unions, but will be paid by Ford.

The agreement has a double significance. Factory floor representation has until recently not been popular in South Africa. White workers, who

have accounted for the bulk of the unorganised work-force, have preferred to rely on union representatives, worker committees and industrial councils to negotiate wages and discuss grievances.

Furthermore, one of the unions which is a party to the Ford agreement—the United Automobile Robber and Allied Workers Union—has not been officially registered by the Government. South Africa's new labour dispensation is aimed at ostracising unregistered unions.

Mr. Regd. Smit, secretary of the coloured National Union of Motor Assembly Workers, another of the parties to the agreement, said it was a move in the right direction for South African industrial relations.



Miller expects higher prime to be temporary

BY DAVID SUCHAN IN WASHINGTON

THE RECENT climb in U.S. interest rates, including last week's rise to 12 per cent in the rate big banks charge their prime commercial customers, is "temporary," according to Mr. William Miller, the Treasury Secretary, in an interview published yesterday.

The Treasury chief told the New York Times that the U.S. was not facing "a period of sustained interest rate rises," but he did not forecast how fast or far they might fall. "Whether interest rates will get back quickly to where they were four weeks ago I don't know," he said.

Mr. Miller's words could be interpreted as a public signal to the Federal Reserve Board, the constitutionally independent central bank, to implement monetary policy gently in the next few crucial weeks. The Carter Administration is understandably nervous about the effect of rising interest rates on voters in the Presidential election.

But the Treasury Secretary also said there would soon be "clear signs of recovery" in the U.S. economy. Ironically,

this is one reason why some private economists regard Mr. Miller as over-optimistic on interest rates—an economic pick-up would take the inflation rate, which has only been slightly depressed by recession, up with it.

Gross National Product in the last three months of 1980 would improve on the expected GNP drop in the current quarter, Mr. Miller forecast, and the earlier Administration prediction of unemployment rising to 8.5 per cent in the fourth quarter would probably not materialise.

In fact, the August unemployment rate was last week reported to have dropped to 7.6 per cent, from 7.8 per cent the previous month. At the same time, a 1.5 per cent rise in wholesale prices in August presages an upturn in consumer prices this Autumn.

One factor influencing interest rates over which the Administration has some control is the level of Government borrowing. The federal budget deficit for the fiscal year ending this September 30 is likely to top \$60bn, a considerable weight on the credit markets and very largely due to the recession effect on Federal revenue and outlays.

Bank curbs may be eased

By Paul Betts in New York

AN ADMINISTRATION task force is to recommend later this year a substantial easing of restrictions currently limiting interstate activities by U.S. banking institutions.

This move, with major implications for foreign banks in the U.S., was confirmed by Mr. Stuart Eizenstat, President Jimmy Carter's chief domestic policy adviser, in a speech at the weekend to the American Bankers Association in Washington.

He said the task force, set up in 1975, would recommend in its long overdue report a gradual liberalisation of the Douglas Amendment, which prevents U.S. banks from taking over banks outside their home states unless granted special dispensation by state authorities.

The debate over interstate banking is currently causing great interest among foreign banks, which have been increasing their penetration of the U.S. market in recent years. The most recent example is Midland Bank's proposal to take over Crocker National of California.

But Mr. Eizenstat indicated the task force would recommend a cautious approach to the liberalisation

Maralyn Edid in Chicago reports on the plight of one recently unemployed American Down but not out in north-west Chicago

MR. PETER BAGNUOLO is to trim administrative expenses by 7 per cent. By 1982 the company wants to bring administration expenses back to the 1977 level.

Mr. Bagnuolo is a casualty of that campaign. His position as administrator of pensions and benefits for Blue Cross Blue Shield's 3,600 employees was merged in April with the post of salaries manager.

The company told Mr. Bagnuolo, who joined the firm seven years ago and has been working in employee benefits since 1975, that it preferred someone with a strong background in salaries management.

Although he has been out of work now since June, Mr. Bagnuolo is not despondent. He is determined to find the right job, preferably in employee benefits.

Every morning, Mr. Bagnuolo leaves his apartment on Chicago's north-west side, either to make the rounds of friends and acquaintances who might give him a job lead or to continue renovating the nine-flat apartment building he bought last year.

He can afford to wait for the right job. He is an adept home repair man and could hire himself out as a day-labourer. He and his 38-year-old wife Barbara are qualified ski instructors, and Mr. Bagnuolo works in a ski patrol at a

nearby park during the winter. By next year the apartment building will also generate income. The Bagnuolos have always

been thrifty livers, and so far have made relatively few adjustments in the family budget. Out of an annual salary in the range of \$35,000 (£14,450) they saved

at least \$6,000, most of which has gone to finance the \$75,000 they have ploughed into renovating their investment.

Mrs. Bagnuolo's father owns the building they live in, where the monthly rent on their apartment is \$250. The couple do not use credit cards, and own their 1973 Ford outright.

The Bagnuolos and their six-year-old daughter Susie favour poultry over more expensive beef. About the only expense the family has cut is entertainment — they rarely eat out and invite people less frequently.

Perhaps the most significant change is Mrs. Bagnuolo's decision to work 40 hours a week as a legal secretary, with placements made by a temporary employment agency.

For the past four and a-half years she has done occasional work at home for \$10 an hour, earning the family an extra \$2,000-\$3,000 a year. As a temporary, she earns only \$6.50 an hour, but the income is more regular. She might take a permanent job if it met her standards of pay and flexibility.

Her husband has applied for unemployment insurance, which he estimates would bring in \$135 a week for 26 weeks if his application is approved. Mr. Bagnuolo says he will evaluate his prospects in November and perhaps decide to move in some other direction if he is still unemployed.

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Peter Bagnuolo... the unkindest cut.

Survey shows Carter level with Reagan

BY DAVID SUCHAN IN WASHINGTON

PRESIDENT JIMMY CARTER has drawn level with Mr. Ronald Reagan, his Republican challenger, for the first time in months, in a major national opinion poll.

The survey conducted for Time Magazine by the Yankelovich Polling Organisation gave each man 38 per cent of electorate support and showed the President with a 10 point lead among women voters, possibly reflecting the Republican Party's recently watered-down backing for the equal rights amendment.

Mr. John Anderson, the Independent candidate, came in a distant third with 15 per cent. But this is a slight improvement on his recent ratings and may win him inclusion in the forthcoming televised election debate with the two major candidates.

Yesterday Mr. Jody Powell, the White House Press Secretary, conceded that the Carter campaign effort to have one television debate with only the President and Mr. Reagan was making no headway. Mr. Reagan has refused to exclude Mr. Anderson outright, in the knowledge that all the polls show

the Independent drawing fewer votes from himself than Mr. Carter.

Inevitably, members of the Carter Administration are being drawn into the political fray. The Republicans have accused both Mr. Harold Brown and Mr. Edmund Muskie of politicising the Defence and State Departments, and now Mr. Zbigniew Brzezinski, the National Security Adviser, has been criticised from a different quarter.

Already embroiled in controversy over his handling of some classified information in the affair linking Mr. Billy Carter and Libya, Mr. Brzezinski has been sharply criticised by Mr. William Sullivan, the former U.S. Ambassador to Iran, of interfering in policy-making and suggesting a military coup against the Ayatollah Khomeini.

Shortly after the Ayatollah took power early in 1979, Mr. Sullivan said Mr. Brzezinski telephoned him over an open line to ask "whether he thought I could arrange a military coup against the revolution."

"I regret that the reply I made is unprintable," Mr. Sullivan wrote.

New York chooses Senate poll candidate today

BY PAUL BETTS IN NEW YORK

NEW YORK goes to the polls today to choose Democratic and Republican candidates for the U.S. Senate election in November after a primary campaign which was remarkable for unpleasantness and bad taste.

The battle in this Republican camp has been particularly unsavoury with the veteran and respected liberal-minded Senator Jacob Javits fighting to win a fifth term against his more conservative opponent, Mr. Alfonse d'Amato, the town supervisor of Hempstead on Long Island.

Mr. Javits is fighting his first major primary contest in his distinguished 24-year Senate career, as in the past his nomination was not questioned. His opponent, according to the Senator, the senior Republican on the Senate Foreign Relations Committee, is seeking to unseat him by what he calls "ghoulish tactics."

The New York Republican Primary has been fought essentially on one issue—the 76-year-old Senator's failing health.

Mr. Javits, who became a Senator in 1958, first raised the issue when he announced last February he would seek re-

election and disclosed he had a motor-neuron disease—an illness which is slowly eroding his nerves.

Mr. d'Amato subsequently tailored his campaign—at times going to extremes—on the Senator's health. Thus New York television viewers have been treated to campaign commercials with a smooth voice telling them "and now, at 76 and in failing health he wants to sit more years" as the screen showed a crumpled Javits poster dropping to the floor.

In turn, Mr. Javits political commercials show the veteran Senator behind a desk saying: "I know my health—I would not run if I could not serve."

Not to be outdone, the Democrats have staged their own glittering primary show in New York. Among their four candidates are two of the more glamorous faces in American politics—Mr. John Lindsay, the former New York mayor, still according to some popular magazines "a bit of a dish," and a former Miss America, Miss Bess Myerson, who has made a name for herself as a consumer protection champion.

Rift in El Salvador army threatens more bloodshed

BY WILLIAM CHISLET IN MEXICO CITY

A SERIOUS rift is developing in the armed forces of El Salvador which threatens to plunge the country into even greater bloodshed. The battle between Right and Left wing extremists has already killed 5,000 people in the Central American country this year.

Washington is watching the latest development closely. The U.S. fears that an army split would destroy the regime it has nurtured, and open the way for full-scale civil war, with repercussions on the whole unstable region.

The dissension in the ranks came to a head last week when Col. Adolfo Majano, one of the two military representatives in the five-man civilian-military junta, publicly protested at the

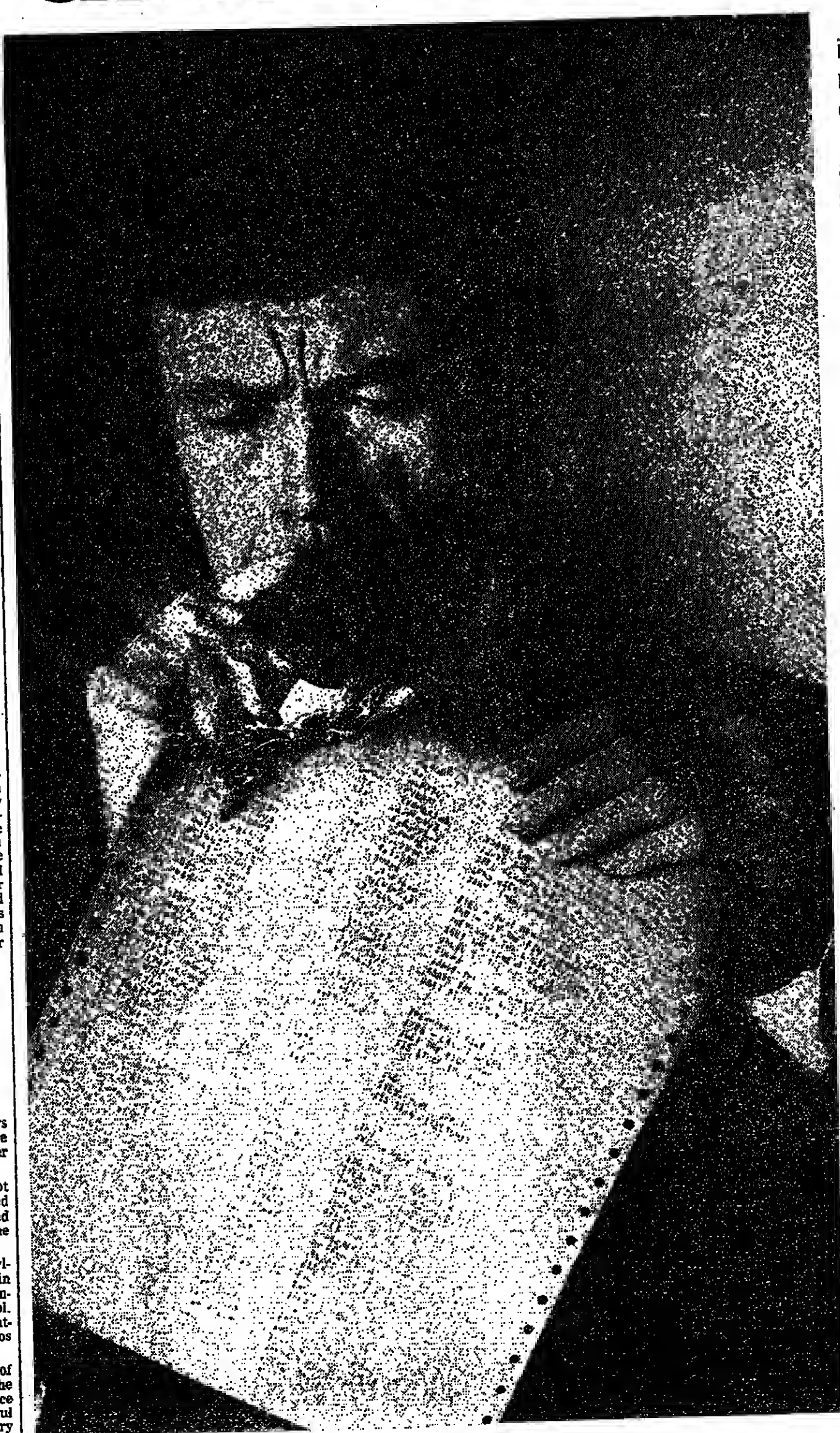
transfer of some liberal officers loyal to him to posts where they have less control over troops.

Col. Majano said he had not countersigned the order issued by the army high command, and threatened to resign if the order was not rescinded.

The move highlights the divisions which have developed in the armed forces since reform-minded officers, led by Col. Majano, overthrew the Right-wing dictatorship of Gen. Carlos Romero a year ago.

The order for the transfer of the officers was issued by the highly conservative Defence Minister and by Col. Abdul Gutierrez, the other military member of the junta.

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WORLD TRADE NEWS

Ghana in attempt to rehabilitate Black Star Line

BY LYNTON McLAINE

THE GOVERNMENT of Ghana yesterday disclosed a series of measures to re-establish the credibility of the Black Star Line, the country's State-owned shipping line which has recently suffered from serious financial management and labour relations problems.

Black Star Line, a member of the UK/West Africa shipping conference, had debts of \$14m (£5.8m) as a result of "major problems" of management, liquidity, fleet replacement and discipline, according to Government officials.

But the problems of the line had now been given "top priority" by the Government, and Dr. Hilla Limman, the President, had taken charge of Black Star Line. Mr. Harry Sawyer, Minister of Transport and Communications, told a Press conference in London.

Measures to bring the "ailing organisation back to health" included the sacking of the entire top management by the Ghana Government. This followed a Government White

Paper earlier this summer on a report of the official committee of inquiry into the Black Star Line's problems. Mr. Sawyer said the "ineffectiveness of management over the years contributed in no small way to the line's liquidity problems."

Four "shipping experts" from West Germany had already taken over as managing director, traffic manager, financial controller and chief superintendent of the line. Mr. Jochem Bone, the new managing director, has been given a free hand by the Government to re-organise the line.

Other measures include the purchase of four new multi-purpose cargo vessels so far this year, from Hyundai Heavy Industries of South Korea.

The new management was expected to improve the financial position of the shipping line. But in the meantime, the Government of Ghana had "taken steps to provide sufficient funds to enable the line to meet all its financial obligations to suppliers and creditors."

UK in move to simplify EEC rules

By Paul Cheeswright

THE GOVERNMENT has started talks with the EEC Commission on means of simplifying EEC Customs procedures affecting outward processing relief. Mr. Cecil Parkinson, the Minister of Trade, said in London yesterday on his return from a textile mission to Hong Kong.

If manufactured products from overseas contain UK materials they may attract a lower EEC tariff because of outward processing relief. Mr. Parkinson is pushing the matter in order to provide better opportunities for UK textile manufacturers to export cloth to Hong Kong.

The aim, as he put it, is "to get a higher share of the cloth content of goods which are coming anyway," but he emphasised that Hong Kong garments would still enter the UK under quota.

The principal of such relief is already embraced by EEC regulations, but the procedures are so complicated they are rarely used. If used, the outward processing relief could mean that Hong Kong garments would be 8-10 per cent cheaper for UK buyers, when British cloth is used.

Italy, Algeria set for economic deal

BY RUPERT CORNWELL IN ROME

ITALY AND ALGERIA are drawing up details of a major economic co-operation agreement, perhaps ready for signature by the start of 1981, which should lead to a substantial increase in trade between the two countries.

In addition to defining areas of co-operation, the scheme, discussed at length during the stay in Algiers last week of Sig. Enrico Manca, the Italian Trade Minister, is likely to lead to the creation of a jointly owned Italo-Algerian bank to further exchanges between the partners.

Sig. Manca's trip was followed yesterday by another visit of a member of the Italian Govern-

ment, Sig. Antonio Bisaglia, the Industry Minister. In the meantime contracts worth some \$1.6bn (£686m) have already either been finalised or are at a very advanced stage.

The latter include a \$400m tyre plant which could be supplied by the Pirelli Group, and two contracts with Fiat for units to produce industrial vehicles and earth-moving equipment respectively, said to be worth \$500m. These last two would be in addition to last week's \$230m deal, whereby the Turin group is to supply cars, trucks and earth-moving equipment.

Other possible contracts also being examined are for Italian companies to supply several smaller electric power stations,

and build a dam at Meskoutine Hamman in Algeria.

The deals are to be set against the background of the latest Algerian National Development plan worth some \$106bn and covering the period 1980-1984.

The mooted co-operation agreement is likely to include provisions for the transfer of Italian technology to Algeria and the training of Algerian skilled personnel. It is largely underpinned by the pipeline project between the two countries which from 1982 will see 10bn cubic metres of Algerian gas carried to Italy, and then into the European network.

The talks of Sig. Bisaglia with various ministers are likely to explore means of securing a

large subsequent increase in throughput. These might involve an increase in gas transported by the pipeline on which work is now being completed, or the laying of a second one alongside it.

This certainty of a sharp rise in Algerian energy exports to Italy could involve its imports being paid directly by shipment of gas. The various possibilities will be examined in detail during Sig. Bisaglia's discussions.

In the meantime, a £18bn (£8.5m) contract has been signed between Anic, of the ENI hydrocarbon group, and the Brazilian state oil concern Petrobras, for the supply by Anic of chemicals for the production in Brazil of biodegradable detergents.

Tanzania in Sonatrach agreement

DAR ES SALAAM—Tanzania and Algeria have signed an agreement under which Sonatrach, the Algerian state oil and gas company will undertake all exploration here.

M. Belkacem Nahi, the Algerian energy and petrochemicals Minister, said drilling will begin soon, focusing on the offshore Songo Songo islands, 170 miles south of Dar es Salaam, where large natural gas reserves and traces of oil have been found in earlier holes—financed by the World Bank.

The Tanzanian National Assembly recently approved a Bill regulating oil exploration and potential production.

Zambia and Malawi have appealed to the Canadian Government to finance construction of a 28-kilometre stretch of the Malawi-Zambia railway.

Although construction costs have not been mentioned early estimates put the cost at about \$40m (£16.5m).

The Canadian Government helped finance construction of the rail link between Salima and Lilongwe in Malawi. —Agencies.

India seeks wider EEC trade in Brussels talks

BY D. P. KUMAR IN NEW DELHI

MR. PRANAB MUKHERJEE, India's Commerce Minister, will be in Brussels in the middle of this week to discuss wider promotion of Indo-EEC trade and economic collaboration. A five-year economic and commercial co-operation agreement with the EEC, now under negotiations in Brussels, will also figure at the discussions.

Mr. Mukherjee has also called a meeting of India's commercial representatives in Western Europe, also to be held in Brussels, and the purpose of this meeting is to develop a new strategy to boost India's exports to the EEC.

The issue of evolving a new strategy for India's exports to Western Europe has assumed urgency because of what is officially described as increasing tendency of protectionism in the

developed countries.

Although Western Europe, particularly the EEC, has emerged as India's most important trading partner over the last decade, accounting for more than 30 per cent of India's exports, there has been a high concentration of markets and of products in its export pattern for these regions.

Nearly 90 per cent of India's total exports to the region go to the UK, West Germany, Belgium, The Netherlands, France and Italy, with the UK and West Germany accounting for 47 per cent of the exports.

Similarly, 65 per cent of India's exports to the region are accounted for by only eight products—textiles and garments, leather and leather manufactures, tea, diamonds, oil cakes, tobacco, carpets and coffee.

Portugal's steel plan moves beyond the drawing board

BY JIMMY BURNS IN LISBON

AFTER NEARLY four years of delay because of Government changes and bureaucratic red tape, Portugal's steel expansion plan has moved beyond the drawing board stage.

In recent weeks Siderurgia Nacional, the State-owned steel company, has signed a contract with one leading foreign concern and initiated arrangements with three more for the supply of all the major equipment needed for the modernisation of the country's major plant at Seixal near Lisbon.

Contrary to what was optimistically forecast by British industry officials in Lisbon Davy Ashmore, the UK company has emerged empty-handed after months of negotiations. Instead the Portuguese have signed a £5.9m contract with Voest Alpine of Austria for the supply of converters. Siderurgia has also signed letters of intent with Italian plants of Italy for the supply of a blast furnace with an estimated value of £20.9m,

with Kawasaki of Japan for the supply of gas cleaning facility, worth £1.9m, and with Schloemann-Siemag of West Germany for the supply of a continuous casting and rolling mill valued at £12.1m.

Some 35 per cent of the equipment cost has been covered by export credit schemes. Siderurgia expects to meet its remaining financial needs through special arrangements with the Government. The company has already been authorised to increase its capital and to claim exemption from taxes on the declaration of dividends on pre-tax profits.

According to Sr. Fernando Marques Videla, Siderurgia's chairman, the estimated £400m investment involved in the first stage of the steel plan is "past the stage of no return" since final supply contracts will be signed within the next few weeks.

The optimism of Portuguese steel officials is in striking con-

trast to the atmosphere in neighbouring Spain, where relations between Madrid and Brussels risk being soured further as a result of attempts by the EEC to block a large new Spanish steel development.

Portugal, like Spain, is due to be accepted into the EEC in 1983, but Portuguese industry officials insist that they have the green light from Brussels for their expansion. They claim that the Seixal plant is compatible with the policy of the Brussels Steel Commission, headed by the Vicomte Etienne Davignon, which aims to phase out older, smaller, and less profitable plants and keep a strict discipline of production levels throughout the industry.

In scope and scale the Portuguese steel plan is different to Spain's, posing only a minimum threat to the Community once Portugal joins the EEC. The project will concentrate on producing long-rolled products which, at present, account for

some 55 per cent of total steel consumption in Portugal.

The more ambitious second stage of the plan, a projected £60bn (£504m) investment in a new integrated plant to produce flat rolled products at Sines, the industrial complex to the south of Lisbon, has been shelved. Portuguese steel officials have responded to the problems of the EEC and to the fact of Portugal's own limited financial resources. The Portuguese accepted the Davignon argument that the production of flat-rolled products in Europe was already well above a realistic capacity.

Not so the Spanish, it seems. Spain is aiming to build a hot-rolled coil complex to meet the demands of its expanding motor industry, even though overproduction of the coils in Northern Europe is currently threatening to discredit the entire Davignon plan.

Portuguese officials defend the Seixal project by emphasising that Portugal remains one

of the few European countries which still has a potentially dynamic growth rate in steel consumption.

The average raw steel consumption per capita in Portugal is 130 kilograms, only a fifth of the European average. Spanish consumption is 300 kgs. Siderurgia economists predict that Portuguese steel consumption will triple by 1990, due to growth in sectors of the economy such as construction, metalmechanics, and automobile components manufacturing. Siderurgia currently accounts for 40 per cent of domestic needs so the aim is to raise the installed capacity at Seixal to 1m tonnes by 1990.

Siderurgia officials admit that present growth forecasts might be slightly optimistic and accept that in the first years of the expansion there may be a surplus of about 400,000 tonnes per annum as production outstrips demand. Nevertheless they insist that all equipment

contracts, which have either been signed or are about to be finalised include clauses committing the supplier countries to either directly absorbing the surplus of long-rolled products produced at Seixal or to facilitating their exports through third countries.

One problem area concerns that of the raw materials needed for the plant. Portugal has low-grade ore deposits in the Moçim mines of the north which are shortly to be developed by the National Mining Company. But Portugal will continue to be a net importer of coal, and the consequent effects of this on the balance of trade, particularly in terms of transport cost, may temper some of the advantages of plant modernisation. Portugal currently imports 350,000 tonnes of coal for its steel industry, mainly from the U.S. and Poland, a figure that will increase to 700,000 per annum by 1985.

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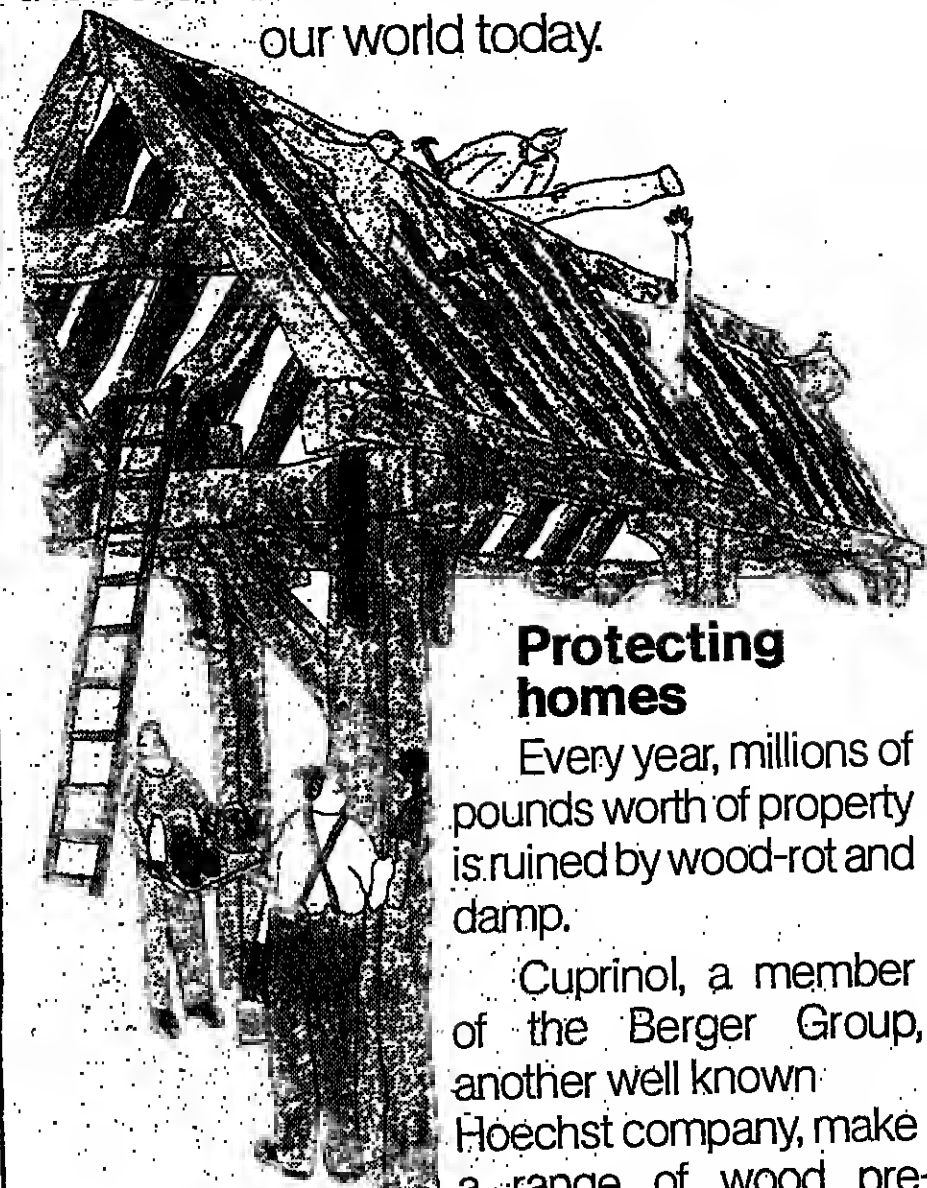
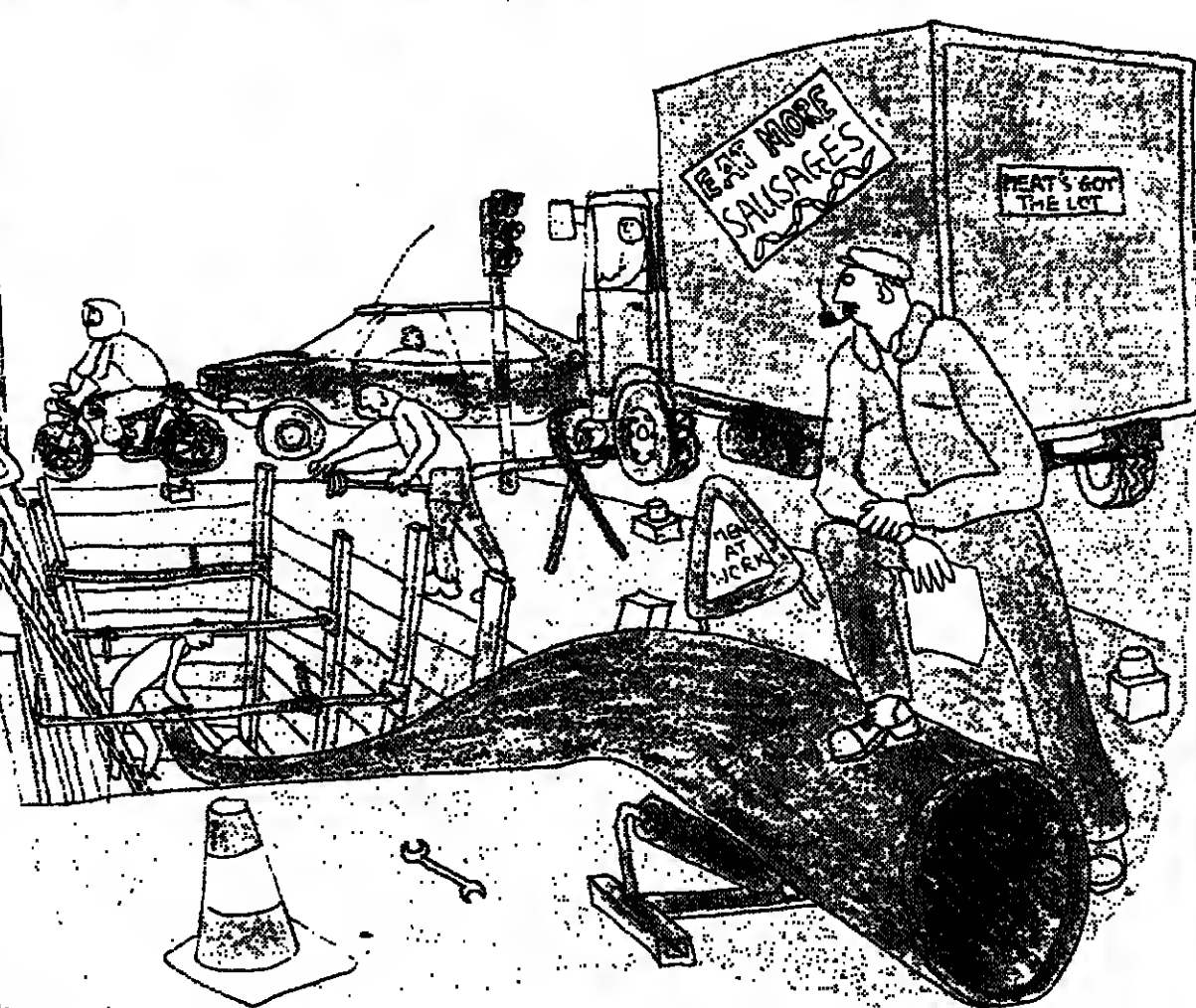
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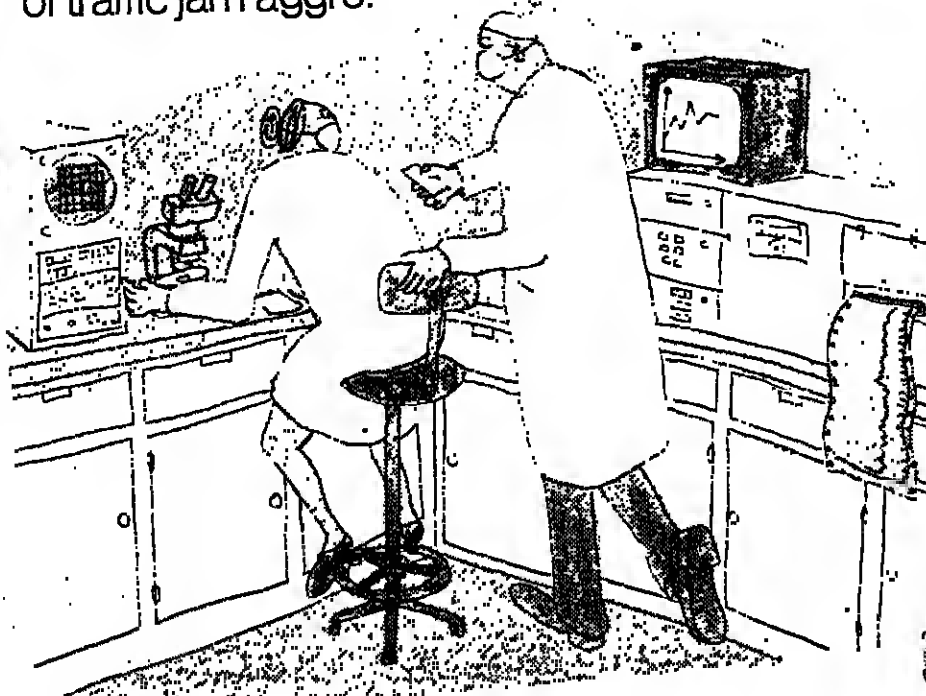
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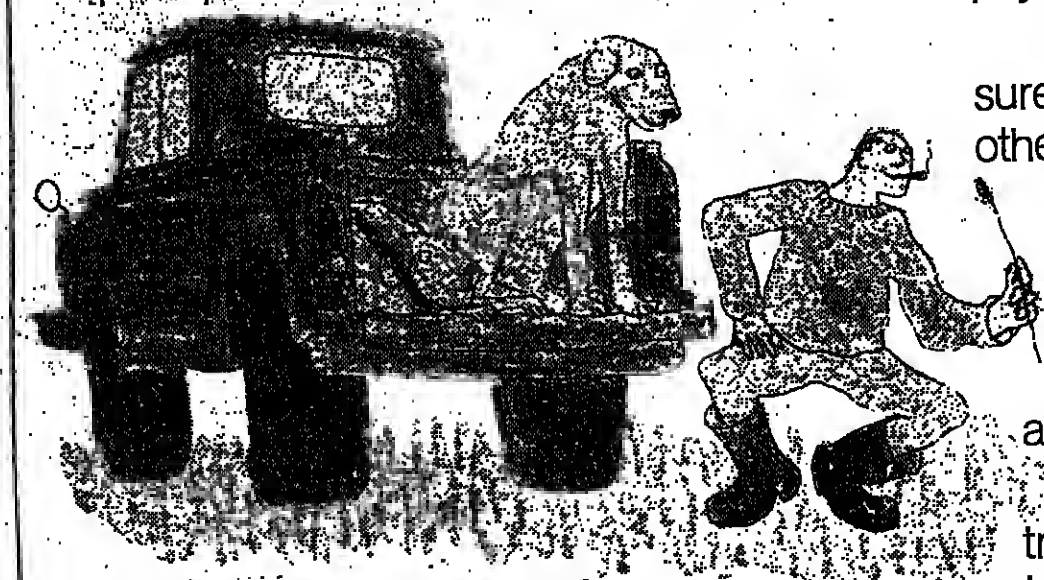
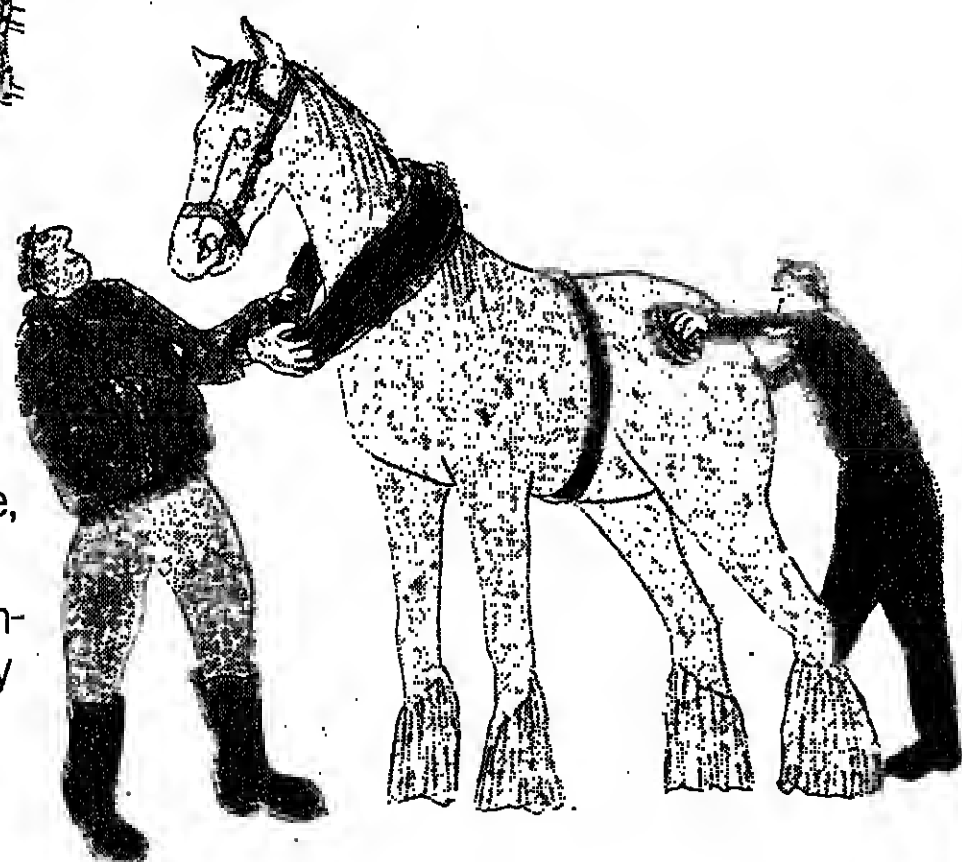
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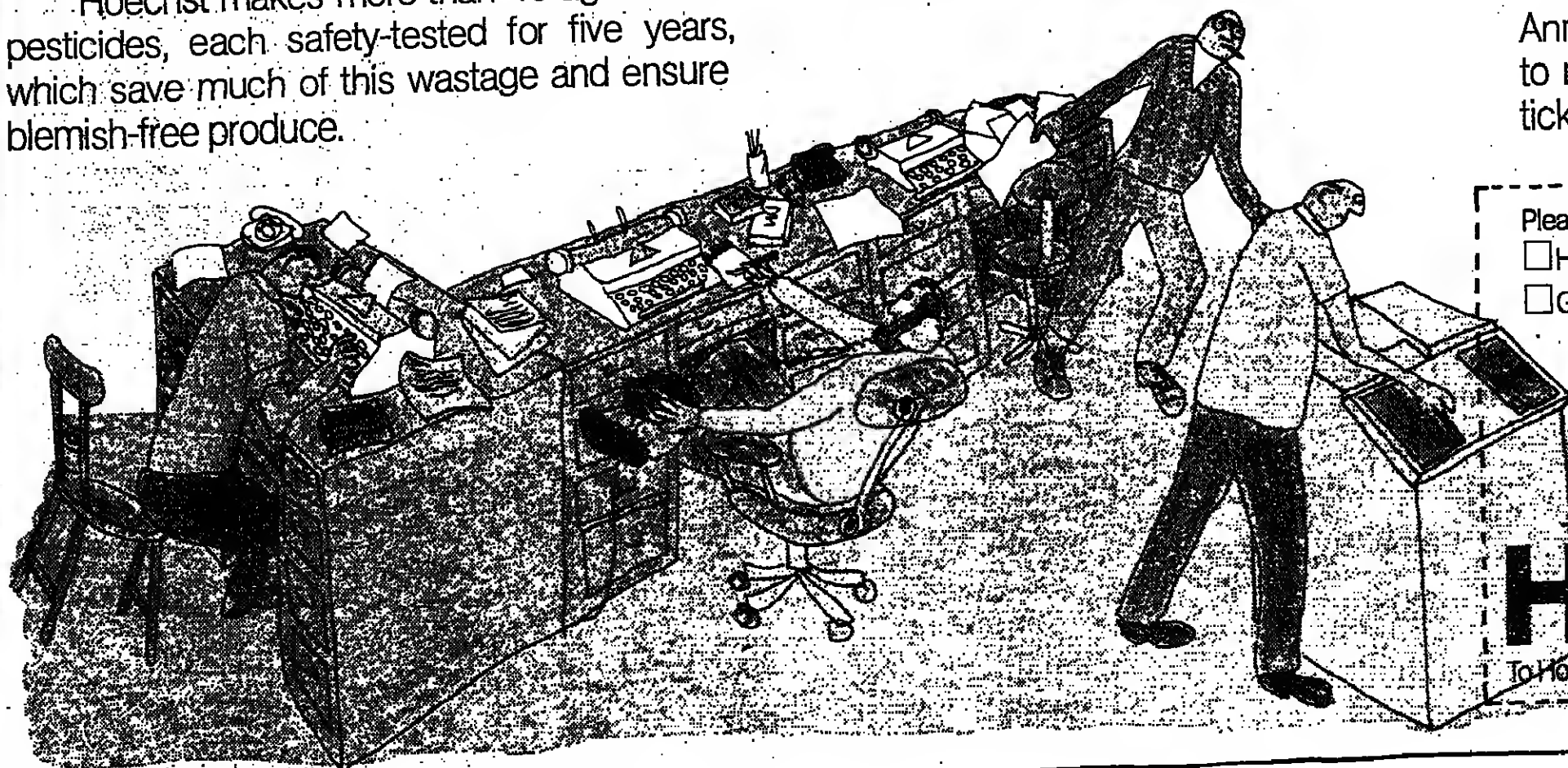
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UK NEWS

'Civil Service pension costs under-estimated'

BY ERIC SHORT

THE GOVERNMENT Actuary, Mr. Edward Johnston, has seriously under-estimated the cost of providing the index-linked pensions paid to civil servants, claims the Centre for Policy Studies, the Conservative Party "think tank".

This attack was made by the centre in its evidence to the inquiry into the value of pensions which was set up by the Prime Minister to examine the index-linking of Civil Service pensions. The inquiry is chaired by Sir Bernard Scott, former chairman of Lucas Industries and a director of Lloyds Bank, Boots and Thomas Tilling. The evidence was prepared for the centre by a committee under the chairmanship of Mr. John Chown, an international tax consultant.

The Civil Service pension scheme is non-contributory and operates on a "pay-as-you-go"

system. The cost of each year's pension payments is made from general taxation. The pensions are automatically linked with the Retail Price Index. The salary levels of civil servants are adjusted to allow for the cost of their pension and the Government Actuary's task is to calculate the overall deduction, comparing the Civil Service scheme with other public and private pension schemes.

In making such calculations, Mr. Johnston has to make several assumptions, including the rate of investment return and the future rate of price inflation. He has assumed that over the long term—defined as at least the next 30 years—the overall investment return of pension funds will be 3 per cent above the rate of price inflation.

Mr. Chown's committee is

bitterly critical of this assumption which it claims is totally unrealistic. It has investigated the investment returns of pension funds and showed that over the past 10 years no fund had been able to keep pace with inflation.

It concludes that the calculation should have been made on a more realistic assumption of a real rate of 1 per cent over the long term. On this basis the calculations made by the committee show that the deduction from civil servants' salaries should be 11.7 per cent instead of 3.8 per cent to pay for their index-linked pensions.

Mr. Chown, in presenting the study, questioned whether the Government Actuary was equipped to make these investment assumptions, since he was not involved in day-to-day dealings with investments.

Row over lost plutonium pins

BY DAVID FISLOCK, SCIENCE EDITOR

THE United Kingdom Atomic Energy Authority admitted yesterday that it mislaid two fuel pins containing plutonium removed from one of its reactors at the Dounreay Nuclear Power Development Establishment, Caithness.

It said that their loss could be accounted for as stock-keeping errors.

The admission came after a BBC television Panorama investigation, screened last night, said that the pins had been lost.

UKAEA reacted strongly last night to the BBC's showing a preview to the Press yesterday. It said that the BBC had refused to show it to the Authority.

Mr. David Steel, the Liberal

Leader, said the losses were "very serious" and called for a Ministerial statement in the Commons.

UKAEA said that the total amount of plutonium was 35 grams, just over an ounce. The plutonium was in the form of a ceramic, welded into fine tubes of stainless steel.

Mr. Cliff Blumfield, director of the Dounreay establishment, said that he was satisfied that the missing pins had never left the site, but were almost certainly sent inadvertently to the chemical reprocessing plant at Dounreay, and dissolved with many hundreds of similar pins.

According to UKAEA both

fuel pins came from the experimental reactor at Dounreay, which was closed in 1977. The one lost in 1978 was an experimental pin containing 25 grams of plutonium and 140 grams of highly enriched uranium.

The pin was in the reactor for only one day, and therefore acquired very little radioactivity. This made the search for its whereabouts much more difficult when the loss was discovered three months later.

Both the Department of Energy and Euratom, whose nuclear inspectors have kept check on Dounreay since 1973, were informed of the loss, and of UKAEA's conclusion that the pin was dispatched in error to the reprocessing plant.

300 jobs to go at Thomas Borthwick

BY MAURICE SAMUELSON

THOMAS BORTHWICK AND SONS, Britain's leading international meat trader is to cut its workforce by a third and to close three of its seven abattoirs in an attempt to reduce its losses.

The company, which recently announced first half losses of nearly £1m, will also close four of its 24 depots and is considering the closure of four others. At least 300 of its workforce of 900 will be made redundant.

Dr. Bill Bullen, chairman, said yesterday that the slaughtering industry in the UK had been "sick for a number of years" and that the company had to get rid of all its loss-making sectors.

Eaton Axles is to close its plant at Darlington, West Midlands, over the next six months with the loss of 443 jobs.

The company also said yesterday there would be a so far unspecified number of redundancies at its other plant at Aycliffe, Co. Durham.

Eaton Axles is a subsidiary of the U.S. group Eaton Corpora-

tion, but the privately-owned British group Rubery Owen has a 25 per cent holding.

Eaton Axles incurred a £3m pre-tax loss last year and the deficit would be greater this year, the company said.

New Hocknall colliery, Huthwaite, Notts, is to close next August because recoverable reserves have been exhausted, the National Coal Board said yesterday.

The mine employs 626 men. The NCB aims to offer alternative jobs to those who want to stay in the industry.

Mr. Ray Chadburn, president of the Nottinghamshire area of the NUM, said the union reserved judgment on the proposals.

Dorman Diesels of Lincoln, is to close its forge on Waterside, South Lincoln, by the end of the year, meaning redundancy for 40 manual workers and 13 staff.

Mann Egerton, the Derby car dealer, is to close its branch at Littleover, Derby, with the loss of about 20 jobs.

OBITUARY

Sir Cyril Kleinwort

SIR CYRIL KLEINWORT, former chairman of Kleinwort, Benson, the City merchant bank, and the related holding company Kleinwort Benson Ltd, died yesterday. He was 75.

Sir Cyril was chairman of the merchant bank between 1966 and 1971. He was chairman of KBL from 1968 to 1977, during which period the bank expanded rapidly to become recognised as the largest of the City accepting houses in balance sheet terms.

Sir Cyril was knighted in 1971 for his services to the City. He was the first chairman of the City's Committee on Invisible Exports, and held that post from 1968 to 1975.

Clergy in TV protest

FOURTEEN Welsh Congregational ministers took over the offices of the Independent Broadcasting Authority in Cardiff yesterday and refused to leave for several hours.

They were demanding the resignation of the chairman and members of the IBA's Welsh Advisory Committee as part of the mounting campaign to get the Government to change its mind over setting up a Welsh language fourth television channel.

The Rev. Aled Gwyn, of Neath, said: "We are calling on the Government to keep its word."

Tory calls for flexible economic policy

BY PHILIP RAWSTORNE

GREATER FLEXIBILITY in implementing the Government's economic policies was urged yesterday by Mr. Robert McCrindle, Tory MP for Brentwood and Ongar.

In a speech at Southgate, London, Mr. McCrindle said that, although there was no support among Tory MPs for a U-turn, there was a growing demand for moderating the timing and intensity of Government policy.

Some MPs questioned whether it was necessary to be "quite so rigid" in implementing it, he said.

Mr. McCrindle suggested that the Government's modest success in curbing inflation should be followed early next year by a fall in interest rates. "In these circumstances, it would be wrong to stand so firmly behind a non-intervention policy that manufacturing industry is rendered incapable

of cashing in on the upturn of the economy which most commentators expect in 1982," he added.

Mr. McCrindle considered that greater flexibility was needed, possibly including a reduction in the employers' National Insurance contributions, to help industry combat unemployment. "What we need is not a U-turn but, rather, a greater use of the steering wheel," he declared.

John Elliott examines the background of the new CBI director general

Boardrooms will welcome move

THE surprise appointment of Sir Terence Beckett as the director general of the Confederation of British Industry will be welcomed throughout the boardrooms of the UK.

He is one of the most respected industrial leaders in the country and has established himself in recent years as one of the more thoughtful, and often provocative, of the industrialists who regularly deliver lectures and speak at major conferences.

At the age of 56, he will bring to the job a mixture of qualities and experience gained from 30 years working for Ford in the UK and Europe, and will add significantly to the CBI's international outlook.

His appointment is a surprise because few people thought that such a senior industrialist would be prepared to take the director general's job.

This, in hierarchical terms, is subservient to the CBI's 20-man president's committee, of which Sir Terence has been a leading member since he became chairman of Ford in 1976.

Neither he nor Sir Ray Pennock, the CBI's president, seemed concerned with such details yesterday when the appointment was announced, and Sir Ray went so far as to state: "This is one of the best things that could have happened this year to this country."

The two men refused to be

drawn on how the CBI could afford Sir Terence, who last year was paid £84,000 by Ford plus various perks including a Granada Ghia.

This problem appears to have been solved with a package deal which includes Ford covering about half this amount through early payment of a pension (and provision of a Granada), while the remaining £45,000 to £50,000 is coming from the CBI.

Some of the CBI's smaller members may disapprove of such payments (a salary range of £35,000 to £45,000 for someone rather younger was originally mooted).

But Sir Ray had no doubt yesterday about the worth of the catch. "I know of no one in this country with such experience of governments, unions, the press and business affairs. I know of no one more fitted with experience, imagination, patience and flair."

A little later he moved on to product planning and made his name by suggesting that the company needed a family saloon of 1300 cc's. The launch in 1962 of the highly successful Cortina was the result.

Sir Terence's pride in this period of his career is illustrated by his entry in Who's Who which says he was also responsible for the Transit van and the "D" series truck.



Sir Terence Beckett, new CBI Director General

So although he started as an engineer and an economist, Sir Terence made his reputation as a marketing executive, and in 1969 was the first Englishman to become Ford's sales director for Europe.

In 1974 he became managing director and chief executive of Ford UK and was made chairman two years later.

Since then he has emerged as one of industry's main spokesmen, being a frequent and outspoken speaker at CBI and British Institute of Management conferences, and has impressed his audiences with a mixture of extensive knowledge of manufacturing industry, reasoned arguments, and powerful delivery.

In this way he developed the job of being the top Ford man in the UK, a post which has only limited executive authority because power is shared with Ford's European organisation.

But Sir Terence is credited with developing widespread contacts with the Government. He played an important part in attracting £300m Ford investment to the UK for the Erika project, now emerging in the form of the new Ford Escort, and has helped to build Ford's share of the home car market to 30 per cent.

Now he is to turn what one of his colleagues calls his "almost missionary concern

for the future of British industry" to guiding the CBI through the recession.

He made it clear yesterday that he does not believe that governments should be constantly blamed for industry's problems—so it remains to be seen how he handles CBI complaints that the Government should do more to reduce interest and exchange rates, abolish the national insurance surcharge and cancel last year's four-month moratorium on regional development grants.

He differs from many CBI members in believing that there should not be any more new labour laws until the latest batch of legislation has settled in.

But if he runs into problems, his reputation at Ford should stand him in good stead. There he has been known as someone who is always approachable, is interested in people, believes in communication, does not keep unnecessary secrets to himself, and does not seek self-praise.

If all that sounds too good to be true, it is also sometimes said that his effectiveness might be slipping because, in recent years, his deep concern about the problems of British industry has been turning to despair as he has watched British labour troubles and foreign competition from Japan eat into manufacturing profits.

Sir Alex Jarratt given new post in Midland Bank reshuffle

BY MICHAEL LAFFERTY, BANKING CORRESPONDENT

SIR ALEX JARRATT, chairman and chief executive of Reed International, has been appointed a non-executive deputy chairman of the Midland Bank, where he has previously been a non-executive director.

The appointment follows the nomination of Sir David Barron as Midland's chairman in succession to the late Lord Armstrong, who died suddenly in July.

It was indicated yesterday that Sir Alex's appointment did not imply that he would succeed to the chair at Midland.

Mr. Geoffrey Taylor and Mr. John Brooks, directors and assistant general managers at Midland, have been appointed deputy general managers. Again it was stressed that this did not necessarily mean that they would become joint chief executives.

Of the chief executives Mr. Malcolm Wilcox, chief general manager responsible for international and related services activities, is due to retire next June. He is thought likely to

continue a relationship with the bank at a senior level.

Mr. Stuart Graham, his opposite number on the domestic banking side, is due to retire in March, 1982, leading to a suggestion that he may well become the sole chief executive for a period after Mr. Wilcox's retirement.

Appointment of a successor as chief executive is expected in the next year. Mr. Brooks, Mr. Graham's deputy, and Mr. Taylor, deputy to Mr. Wilcox, are among main contenders for the post, say Midland sources.

Mr. Thornton Bradshaw, president of Atlantic Richfield, the U.S. oil company, was elected chairman of the Observer at yesterday's board meeting, succeeding Lord Barmston.

Mr. Bradshaw has been the company's main representative on the Observer board since January 1977. The company bought 90 per cent of the newspaper's shares for a nominal £1 in November 1976.

Mr. Thomas Henry Kerr, 56,

director of the National Gas Turbine Establishment, Prestock, has been appointed director of the Royal Aircraft Establishment, Farnborough, the Government's premier research organisation. He succeeds Mr. R. P. Probert, who died recently.

Mr. Kerry's place as director at Prestock will be taken by Mr. Hugh Wason Turley, 57, now a director-general in the Procurement Executive of the Defence Ministry.

Mr. Robert Ramsay is leaving Sarabex, the Arab-owned money broker, less than a year after joining as joint managing director.

He has been appointed manager of the foreign exchange and money market operations of the London office of Banca Serin, a Mexican bank opening a London branch for the first time on October 15.

The Bank of England confirmed yesterday that Sarabex retained the status of recognised money broker accorded it in August last year.

Decision awaited in Cadbury battle

BY RAYMOND HUGHES, LAW COURTS CORRESPONDENT

A last-minute attempt may be made today to delay tomorrow's meeting of Westward Television shareholders.

If the warring factions on Westward's Board have not agreed on a postponement, an Appeal Court judge may be asked to grant a temporary injunction ordering the meeting not to be held pending an appeal against last Friday's High Court ruling that it could go ahead.

The delay is sought by Westward's chairman, Lord Harris of Greenwich, and other directors fighting Mr. Peter Cadbury's bid to regain control of the company.

Failing agreement, the Harris faction would need a temporary order because it would not be possible to get an appeal before the court and determined before the meeting, due to start at 1.30 tomorrow at The Carlton Tower Hotel in London.

Last night no final decision had been made about going to court, although arrangements had been made for Lord Justice

Brightman to sit this morning to hear any application.

The meeting has been called by Mr. Cadbury, who was ousted as Westward's chairman in July. Its purpose is to remove six of the directors—including Lord Harris—and reinstate Mr. Cadbury and Lord Lisburne, former deputy chairman.

The meeting's outcome is regarded as a foregone conclusion as Mr. Cadbury and his allies control 116,000 of the company's 200,000 voting shares.

Lord Harris and his colleagues claim that tomorrow's meeting is invalid.

Mr. Cadbury says the Board is acting in bad faith and is delaying the meeting to retain control of the company for as long as possible.

The Harris faction replies that the meeting must await a report from Price Waterhouse and Company on alleged irregularities in Westward's finances.

Right-wing Labour rebels given a month to conform

BY PHILIP RAWSTORNE

RIGHT-WING Labour rebels were last night given a month to withdraw their threat to stand against Labour Left-wingers at the next general election or face expulsion from the party.

The decision was taken by Labour's organisation committee under Mr. Eric Heffer, the chairman, by nine votes to four. The resolution, tabled by Mr. Frank Allaun, is expected to be endorsed by the national executive committee later this month.

Proposals for the immediate proscription of the Social Demo-

cratic Alliance (SDA), with which the 16 rebels are associated, were shelved.

Dr. Stephen Haseler, SDA chairman, said last night that the alliance would not be intimidated by the organisation committee's move.

"If the party goes unilateral at next month's conference, and if the constitutional changes which the Left wing is seeking go through, then I am certain that our people will go ahead with their opposition to prominent Left-wingers at the election," he said.

Burlington House antiques fair opens

BY ANTHONY THORNCROFT

THE Burlington House Fair, the most important sale of antiques in the UK, will be opened at the Royal Academy this morning by Mrs. Thatcher. The public will be admitted from 5 pm and then daily until September 17, entrance fee £2.

The fair was arranged at short notice to take the place of the Grosvenor House antiques fair which was moved from the hotel following an industrial dispute. Even so, 51 leading British dealers have taken space and another, larger, display is already planned for the Royal Academy for the spring of 1982. This interim event combines the range of antiques—furniture, porcelain,

etc., as well as paintings, of the Grosvenor House tradition—with the top quality paintings which were a feature of the previous two Burlington House Fairs held at the Royal Academy.

Although there are no really outstanding works of art for sale, the general standard is high and breaks out of the pre-1850 corset which has limited similar major antique fairs in London. The goods range in price from around £50 for items of glass to more than £100,000 for a painting by the 17th century Dutch artist van Ruydael, and in total are valued at £240m. A feature of the display is the careful planning of

the exhibits—Blairmains, which specialises in 18th century furniture and works of art, has linked its stand with Browne and Darby, which is showing some very appropriate 20th century paintings, to good effect.

Many of the top London dealers—Agnew, Artimis, Blunt, Brod, Colnaghi, Garrard, Leger, S. J. Phillips, Spink—have taken space, and in a fairly limited area (because the Royal Academy is unveiling a major Stanley Spencer exhibition in mid-September). The show may help to lift the antiques trade out of its current depression.

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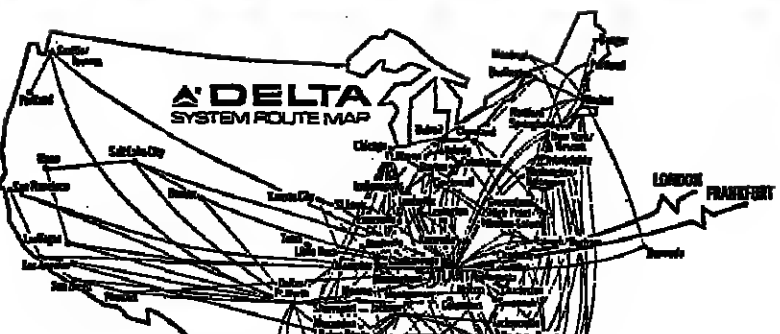
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Backing the small man rated as top issue

By Our Economics Correspondent

THE encouragement of small business is the most important element of Government policy according to a survey conducted among leading MPs, businessmen, trade union leaders, editors and journalists.

A total of 340 people were questioned in June about their attitudes towards issues affecting Government policy and the economy. The market research study was commissioned by the McCann Erickson advertising group.

The sample narrowly rated the encouragement of small business as the major issue for Government, followed, in order, by trade union reform, control of the money supply, cuts in public spending, less Government intervention in business, and cuts in personal direct tax and company tax.

There were differences between the groups in their attitudes on particular issues. For example, while trade union reform was rated second overall it was placed fifth by trade union leaders and fourth by MPs. The sample of MPs was evenly balanced between the two major parties.

Somewhat surprisingly, businessmen rated cuts in company tax lowest on their preferences, though this may reflect the small amount of corporation tax being paid by many groups. Cuts in personal direct tax were also low on almost all lists.

The biggest contrast was in attitudes towards public spending—an issue rated highest by businessmen and lowest by trade union leaders.

The survey also revealed general agreement that inflation is the most important problem facing Britain during the next five years, followed by industrial investment, unemployment and poor management practices.

Brokers at Lloyd's want Fisher proposals changed

By John Moore

LLOYD'S of London insurance brokers are seeking major changes to proposals prepared by Sir Henry Fisher for improved self-regulation within Lloyd's.

The Lloyd's Insurance Brokers' Committee, representing 265 broking firms, in a letter to Mr. Peter Green, Lloyd's chairman, has recommended an important amendment to the draft Bill implementing main proposals of the Fisher recommendations, and has listed 15 other reservations to the Fisher report.

The Bill, as drafted by the Fisher working party, provides for creation of a 25-strong Council of Lloyd's with wider statutory and regulatory powers than the present 16-man ruling Lloyd's committee.

The rule-making powers of the 15,552 private members of Lloyd's would pass to the new council.

Sir Henry Fisher and his working party said in the draft legislation they prepared that

"it was no longer practical or expedient for ultimate control" of Lloyd's to rest with the members of Lloyd's at a general meeting.

The brokers seek to amend the Bill so that the private membership retains "longstop" powers over the council. Any new Act for Lloyd's should include provisions for members to be notified of possible changes in by-laws, they say.

Within two months of that notification, members of Lloyd's not working in the market, of whom there are over 15,000, and the working members, should have power to petition a meeting to ratify the council's by-law changes.

Mr. Douglas Lyon, chairman of Lloyd's Insurance Brokers' Committee, part of the British Insurance Brokers' Association, has said in the committee's letter to Mr. Green that "we regret that some of Fisher's comments on Lloyd's brokers give the impression that smaller firms are less secure."

The committee intends to see that future conditions and requirements for Lloyd's brokers apply "equally and fairly to all."

The brokers have said that there is "serious cause for concern" about the proposal by Sir Henry that they divest themselves of their links with underwriting syndicates at Lloyd's. They might support a minority view in the Fisher report.

This suggested measures to reduce likelihood of interference of brokers in underwriting syndicate management companies without divesting themselves of their commercial links.

The larger brokers have been wholly against divestment from underwriting interests because they derive an important part of their revenues from that source.

The brokers have also questioned the necessity for a Lloyd's brokers "guarantee fund."

New BBC arts series escapes cash cuts

By Alan Forrest

AFTER a summer of difficulties, the BBC yesterday announced an autumn schedule of television arts programmes costing between £3m and £4m.

Although there will be fewer music programmes—mainly because of the two-month musicians' strike which wrecked the Promenade Concerts—officials were relieved that threatened economic cuts had not seriously hit their autumn schedule, though the future is still uncertain.

The new package is the answer by Mr. Humphrey Burton, arts department head, to accusations of falling standards and "growing philistinism" at the BBC.

He said yesterday: "We took a lot of stick in the summer and this made me mad. In fact, there has been no retreat in our commitment to the arts. We are proud of our achievements."

The package includes BBC 1's The Best of British, ten half-hour films featuring a different artist or entertainer each week. Stars include songwriter Elton John, theatre director Peter Gill and jazz pianist George Shearing. Rudolf Nureyev will introduce the series.

BBC 2 plans include The Shock of the New, eight one-hour programmes on modern art, a regular Sunday night music programme and a monthly opera on Saturday nights, including live relays of La Traviata from New York's Metropolitan Opera House and John Schlesinger's new production of The Tales of Hoffmann from Covent Garden.

Many Liberals opposed to talks on alliance

By John Hunt, Parliamentary Correspondent

THE POSSIBILITY of a pact between the Liberals and disaffected social democrats from the Labour Party met with strong hostility from Liberal MPs and delegates gathering in Blackpool last night for their annual conference.

Mr. David Steel, the Liberal leader, wants to keep his options open in the event of a new centre party being formed next year by Mr. Roy Jenkins, the former Labour Chancellor of the Exchequer. But he will find it extremely difficult to maintain this policy in the face of the widespread opposition apparent in his party.

Speakers in the main Liberal policy debate on Friday will be looking for two assurances from Mr. Steel: 1—that he is not preparing the grounds for some kind of Liberal merger with any new social democrat grouping that might emerge, and 2—that he is not prepared to enter into a full-scale electoral agreement whereby Liberal candidates would stand down in constituencies where the social democrats fielded candidates.

When Mr. Steel makes his major conference speech after the debate, delegates will expect him to explain where he stands on the issue.

There was a feeling among many Liberals at Blackpool that Mr. Steel's flirtation with Labour right-wingers had damaged the party's chances at a time when it should be gaining support as a result of public disenchantment with the Government's economic policies.

Mr. Richard Wainwright, MP for Colne Valley and the party's economics spokesman, said that the idea of a new centre party was never on. But he would be prepared to see the Liberals entering into a loose parliamentary coalition in the Commons with any social democrats who were elected under their own steam. In the North where Labour was the main opponent of the Liberals in many constituencies, an electoral arrangement with social democrats would not be tolerated.

Mr. David Penhaligon, MP for Truro, said he was "fed up" with Mr. Steel banding out in-

itations to social democrats who had no intention of joining the Liberals. He thought that Mr. Steel should make it clear that an independent Liberal Party would be fighting the next election, whatever happened about the formation of a fourth party of the Centre. Like many Liberals, he maintained that a new grouping under Mr. Jenkins was in any case a "farfetched non-runner."

He felt that the Liberals would be reaping the benefit of Conservative unpopularity within the next 18 months and should concentrate on preparing to win any by-elections that might arise. Social democrats who left the Labour Party would then be welcome to join the Liberal Party.

Lord Beaumont of Whitley, a former president of the Liberal Party, said it would be "absolutely disastrous" for the Liberals to be seen playing "footy-footy" with Mr. Jenkins.

"He presents exactly the wrong kind of image for us," said Lord Beaumont.

Inmos near factory site decision

By Robin Reeves, Welsh Correspondent

A SITE in Cardiff or Newport, Gwent, looks virtually certain to be the location for Inmos's £25m UK manufacturing facility. A final decision is expected in a fortnight.

The Government agreed in July to give a further £25m to Inmos through the National Enterprise Board, on condition it established its factory unit in South Wales for the mass production of advanced electronic components. The company has examined a number of possible locations in the region.

The investigations have included one site even further west of Inmos's Bristol headquarters, near Port Talbot,

where nearly 6,000 jobs are being shed at the British Steel Corporation's plant. But this has been rejected.

Inmos is understood to have narrowed the choice to the Welsh Development Agency's Forest Farm estate on the M4 motorway in north Cardiff or a 30-acre site owned by Newport Council at Duffryn, beside Tredegar country park and the Government's business statistics office.

Cardiff is cautiously optimistic it will come out on top. While Newport is 10-15 minutes nearer to Bristol on the M4, the site requires some preparation

before building could begin. It also does not have the prestige and amenities of the Welsh capital.

At Cardiff, Inmos would be required to share the site with the recently established offshoot of the Radiochemical Centre, but building could begin immediately. The WDA has already spent more than £1m preparing the land for development and laying on services, which could reduce the period required for building by up to four months compared with Newport.

Inmos intends its Welsh production facility to be in business by mid 1982.

Motion on jobless strengthened

A SCHEME to reduce unemployment by raising £2bn by index linked national savings, for spending on capital projects such as roads and schools, will be put before the Liberal assembly in Blackpool tomorrow, writes John Hunt.

The motion was drawn up yesterday by the Party steering committee after complaints that the existing motion on unemployment was too weak.

The new resolution condemns the Government for its "insensitive and negative" attitude to the 2m unemployed. It says the Government is indifferent to

the demolition of the industrial base by a rising tide of bankruptcies.

Mr. Richard Wainwright, the Liberal economics spokesman, said last night that the resolution should encourage the more progressive elements among Conservative MPs and in the Cabinet who want Mrs. Thatcher to adopt a more flexible and imaginative approach to unemployment.

"It will encourage the 'wets' to tell Mrs. Thatcher that enough is enough," he said. The motion also calls for an additional £750m in public

expenditure for industrial retraining and the expansion of advisory services for small and medium-sized business. It wants a sharp cut in interest rates to reduce the uncompetitive value of the pound and a special differential interest rate for investment in industry and infrastructure.

The motion seeks to abolish the employers' national insurance charge for all employees under 21, and defer payment of PAYE for employers "for whom payment would be the final cause of insolvency."

Hazel Duffy looks at BSC's Redcar blastfurnace

Market fears will remain when furnace troubles are solved

THE BRITISH STEEL Corporation's blastfurnace at Redcar, Yorks, which has been closed because of technical problems, was assigned and conceived in the days when steel was in short supply.

The emphasis then was on investment in bigger and better integrated steelworks. By the time the blastfurnace was commissioned in October 1979, the whole market for steel, and for British steel in particular, had changed dramatically.

The economics of Redcar, however, remain the same. In order to achieve the economies of scale, the furnace needs to make more than 50,000 tonnes of iron a week. That means orders for the plant's steel products have to be sufficient to justify an iron make of that amount.

BSC has tried to load Teeside with orders, but this has not been easy during the summer months when demand has been depressed and post-strike imports have continued to flow.

BSC's Teeside division admits that the level of demand for steel has affected the amount of iron that it has been able to make since the steel strike ended at the beginning of April.

The immediate problem at the Redcar furnace, however, is technical. As part of routine, the furnace is taken off blast for one day every three weeks in order to carry out main-

tenance checks. But, on two occasions since April, the period "off blast" has been longer than this, to carry out unscheduled repairs.

The result was that the furnace's temperature fell below the necessary level and the tuyeres at the base of the cylinder, through which pre-heated air is blown, became blocked. The burden materials (sinter, coke, etc.) in the furnace were unbalanced, and it was found necessary to burn more coke.

For the past 10 days, therefore, the Redcar furnace has not been producing enough iron to keep steelmaking going at a sufficiently high level. At the weekend, the decision was taken to lay off the steelmaking workforce at nearby Lackenby until the problems have been solved.

Some iron was made yesterday, and BSC hopes it can return to normal working by the end of the week.

The Redcar problems will reinforce the arguments of critics who believe that steel-making is better suited to smaller, more flexible plants than the huge integrated plants which formed the basis of BSC's investment plans during the 1970s. At Redcar, where the furnace has a 10,000 tonnes a day capacity and is the largest in Europe, the philosophy was pursued to the extreme.

However, taking Redcar off

blast has not caused any embarrassment over steel supplies. For the past few months, stocks of steel sections, coil, billets, and other products have been built up on Teesside. Whether this was because orders have fallen short, or because it was necessary to load the blastfurnace in order to justify it in economic terms, is not at this stage clear.

BSC argues that the process of bringing such large, sophisticated equipment on stream is almost certain to be accompanied by some problems. In its last full week of iron making, the furnace produced 43,000 tonnes, a good figure. The target is for 52,000 tonnes a week.

Given the competitive margins agreed at Redcar before the furnace was commissioned—in contrast to the problem which dogged the commissioning of the smaller furnace at Llanwern three years ago—and BSC's insistence that it use cheap, high quality, imported coking coal in addition to British coal, the economics of the £400m Redcar iron complex looked good at the outset.

But, even last October, the sourness of the steel market was taking some of the edge off the celebratory opening of the furnace. Today, even when the technical problems are sorted out, the market problems remain to dog Redcar, and the rest of British Steel.

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Transfer Books of the Preference Shares

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T. L. BALDWIN,
Secretary.

Baginbun House,
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London SE1 2AJ.

CITY OF VALPARAISO

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MEETING OF SHAREHOLDERS

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Statute of the Company, the Board of

Directors of FINA ANGOLA, S.A.R.L. has

decided to convene an Extraordinary

General Meeting of Shareholders

which will take place on the 28th of

October 1980 at 11 AM at the Head

Office of the Company in Luanda. Any

shareholder entitled to attend the

Meeting must deposit at least three

days before the date of the meeting

a document certifying that he is

the holder of the shares. The

shareholders who would like to

attend the meeting must deposit

at least three days before the date

of the meeting a document certifying

that they are the holders of the

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shareholders who would like to

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Technical Page

EDITED BY ARTHUR BENNETT AND ALAN CANE

COMMUNICATIONS

Growing market for data transmission

IN 1978 the newly formed association of 17 Post and Telecommunications (PTT) authorities in Europe, Eurodata, set up essentially to establish facts about telecommunications in Europe and make forecasts, commissioned Logica to make a study of data transmission to the year 1987.

The London company has just completed its findings and they are to be made available in an edited commercial form to any interested organisation at a cost of £30,000. Particular aspects will be published in modular form at proportions of this cost.

Logica forthrightly admits that the market for data transmission has grown twice as quickly as was predicted in a similar study made in 1972 but asserts that the available data is now much more positive and comprehensive so that, coupled with better forecasting techniques, the new predictions are liable to be rather more accurate.

The present position is that almost a million people are now utilising data communications on a daily basis, yielding about \$2bn of revenues for the European PTTs.

But by 1987 it is predicted that this will have risen to 6m users and this means, says Logica, that the PTTs will have to install modems, leased circuits and associated facilities at about four times the rate they do today, with correspond-

ing increases in purchases from their suppliers and a major increase in the manpower currently employed in data communications.

Generally speaking larger users are liable to go on using dedicated data lines (circuit switching) but in the public sector growth in circuit switching will be outstripped by packet working so that by 1987 the ratio will be two to one. But the whole of the public network business, now forming only 2.3 per cent of all data connections, will constitute 30 per cent by 1987 according to the survey. Some 450,000 new public network ports and connections will have to be installed by then. In addition, another 600,000 leased circuit connections will be needed for the heavy duty users.

By 1987 telephone usage in relative terms will have risen very little and in view of the intensive use of data terminals in comparison with phones the revenue significance of data transmission to the PTTs will be very marked.

The study provides a mass of detail about usage by country, region, industry sector, application and so on. It turns out that although Sweden has the largest number of data connections per 1,000 employees, the UK is the biggest user, making twice as many data connections as West Germany.

At the industry level the report shows that banking, DP

services and air transport are clear leaders in the number of connections per employee although by 1987 the insurance industry and the utilities will be coming up to similar levels of usage.

The total cost of the Eurodata 1979 study has been about £1m. It has involved no less than 2,800 face-to-face interviews, 50 man years of effort and an accumulation of 800,000 separate estimates and forecasts plus 3,000 pages of computer print-out.

According to project consultant Tim Johnson Britain is still in a good position in data communications technology and there is a real prospect of it taking over the lead in the provision of these kinds of systems.

Logica is now carrying out additional work on behalf of manufacturers to determine such things as the value of the equipment that will be needed and the rate of capital investment to effect its production.

Johnson points out however, that it can only be the quick acting manufacturers that will be able to "make a killing worth many billions of dollars." It is understood that IFT, IBM, Racal, Siemens and Rank Xerox have already availed themselves of the report. Further details can be obtained from David Lewin at Logica, 64 Newman Street, London W1A 4SE (01-637 9111) or from Steve Valiant at Eurodata Foundation, 55 Old Broad Street, London EC2M 1RX (01-638 3308).

GEOFFREY CHARLISH

SAFETY

Shows truck location

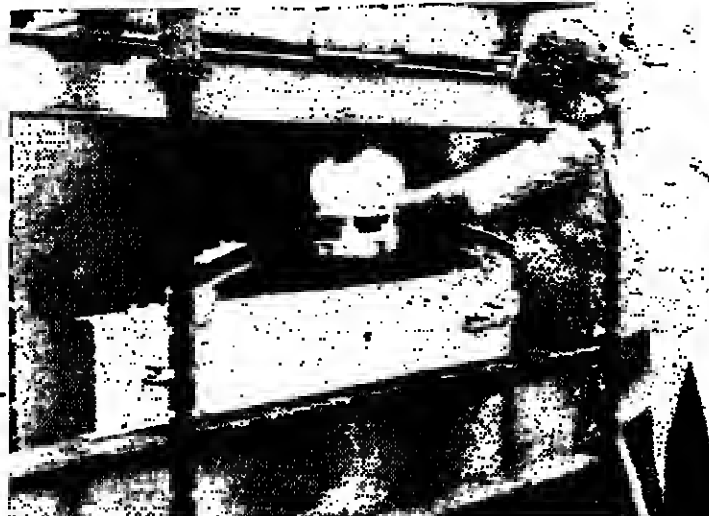
DEVELOPED BY Hydraulics and Pneumatics of Wolverhampton in conjunction with the National Coal Board is the Rovir bangle monitor which enables the operator to see at a glance the position of a haulage train in mine drifts.

An analogue display gives an immediate approximate position in relation to diagrams showing both the roadway, plan and its elevation.

Data is obtained for the displays by measuring the speed and distance travelled from a sensing head mounted on the haulage surge wheel (normally very near to the driving position). There is no need for a series of limit switches to be fitted to the track.

The unit, which also has lamps to show overspeed, hazards and so on, can operate in drifts up to 3,000 yards long, is intrinsically safe and can be operated above or below ground. It has adjustable men/materials settings and a digital display which shows precise distance travelled.

More from the company at Unit 6, Wulfrun Trading Estate, Wolverhampton, WV10 6HY (0902 773411).



Two of the latest developments by Rubery Owen (Pressings and Fabrications) are a carbon fibre/glass leaf spring for commercial vehicles and an under-ride protection unit. The leaf spring (shown on the left undergoing a test) is stated to provide a weight saving of well over 60 per cent. It is manufactured as a hybrid layered composite of glass fibre and carbon fibre and each end has an integral steel bracket

DATA PROCESSING

Records flexible working hours

MADE BY Benzing in West Germany and now to be supplied by GEC company Reliance Systems in the UK is a flexible working hours recorder called Redacomp.

All the employee has to do is insert a personalised plastic card into a wall-mounted unit every time he enters or leaves the premises. Any of several terminals in a building may be used and on versions equipped with displays the user will be able to record his presence or absence and also see the details of his hours worked to date.

Authorised absences — holidays, sickness, official trips —

can be entered into the system by suitable management staff only and from units equipped with a printer lists of people absent, with an analysis of the reasons, can be obtained.

The system's programming allows part time employees and occasionally employed people to be accommodated, and in addition any overtime worked can be programmed to be recorded on a separate memory for later analysis.

Redacomp will also provide the complete time record of any individual, summary records of all employees and data in other formats as well.



with "eyed" location collars. The under-ride device (shown on the right) is designed for vehicles with gross weights between 16 and 32 tonnes. In the event of a collision at the rear the device deflects and reduces the impact. It will withstand an impact of 10 tonnes and return to its normal operating position afterwards.

INSTRUMENTS

Finds surface cracks

THE ABILITY to set its own zero point automatically, regardless of the material, is the main advantage of an eddy current surface crack detector, Novalac 96c, put on the market by SI (Systems+Instrumentation).

This portable battery-operated unit works on the customary "disturbed tuned circuit" principle. Basically, the eddy current probe forms part of an accurately tuned circuit and also induces energy into the sample. With no sample defects the induction pattern is uniform as a scan is made with the probe, but a defect causes a reaction in the tuned circuit and the resulting change of current in the main oscillator gives a basis both for detection and measurement of crack depth.

Because a change in the

material under test can produce similar effects, the 96c is provided with a special circuit that is able to sense small changes from sample to sample and automatically reset the instrument's meter to zero.

This unit also has the advantage that when the probe is above a defect, the reading is maintained until the probe is moved away. In addition, the response speed is very fast so that cracks are not likely to be missed in a relatively fast scan. The instrument can be used, and has calibrations for non-ferrous, ferrous and austenitic materials. Audio indication of a detected flaw is provided, and a neon lamp indicator.

The instrument measures 290 x 160 x 115 mm and weighs 2 kg. SI (Systems+Instrumentation) is at 31, Bridge Street, Pershore, Worcs, WR10 1AJ (03865 3317).

MATERIALS

Conveyor repairs

MATERIALS, accessories and simple tools needed to repair conveyor belts quickly are contained in a kit now being marketed by Devcon, Station Road, Thelme, Reading, Berks RG7 4AB (Reading 302304).

The repair material is a urethane compound brand-named Flexane BRK which when applied does not require heat or pressure. It is simply mixed and trowelled into place.

When filling thick sections of damaged belt there is no shrinkage and no waiting for several thin layers to dry. It cures to a resilient and durable rubber-like material which is claimed to resist the effects of oil, grease and most chemicals and to withstand temperatures up to 120 degrees C.

ELECTRONICS

Plots at high speed

NOW AVAILABLE from Benson Electronics is a 22 in electrostatic plotter able to work at 200 dots per inch and produce 13.2 sq ft of plotted material per minute.

This model 9222Q uses the Quadrascan writing head containing four offset rows of writing stylus rather than the conventional single or double row. In operation, each dot appearing on the paper overlaps adjacent dots by about 50 per cent giving very smooth lines and solid areas which are very black.

Resolution, horizontal and vertical is 200 dots/inch; the dot size is nine mils with a centre to centre dot spacing of five mils.

In the plotting mode the copy leaves the machine at up to 1.5 in/sec with a repeatability of 0.1 per cent and a maximum accumulated error of 0.2 per cent.

When used for printing the machine's output rate is 560 lines/min from a standard ASCII set of 123 characters, with two software selectable sizes.

At the push of a button, a "quick look" plot can be obtained requiring only a quarter of the data rate to provide a reasonably detailed result, saving considerably on central processor time.

Interfaces are available for connection to most popular minicomputers and there is a software package consisting of Fortran and Assembly routines which allows the CPU to sort raw vector information and convert it to raster data for printing.

More from the company at Redcliffe Way, Bristol BS1 6NH (0272 211501).

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RETAILING

Cashing in on new technology

THE HUMBLE cash register has moved a long way, thanks to microelectronics technology. Latest in the line of electronic cash registers comes from Sweda, with its L50 series.

On display at the Hardware Trades Fair, at Olympia this week, the L50 series has a number of unusual features.

In can function as a stand alone electronic cash register or be used as a point-of-sale system providing, Sweda says, "consolidated trading and financial reporting, data collection and telecommunications".

The key to the Sweda system is what it calls a "consolidator." It is a manager's terminal with the ability to carry out transaction processing with up to 31 individual cash registers. Sweda says: "The user can load programs and maintain files for all the registers from a single point and obtain a wide variety of management reports on subjects such as hourly sales, stock control and sales assistant productivity. The information obtained can be displayed on a video screen or printed as hard copy."

Sweda argues that using the "consolidator" there is no need for a back office computer, and that the L50 series costs substantially less than traditional point-of-sale systems.

There are three basic models: the L55-10 with 18 fixed and up to 22 keys which can be individually programmed; the L55-20 with 18 fixed and up to 34 programmable keys, and the L55-30 with 18 fixed and up to 84 programmable keys.

Other facilities include an external memory file, which can hold up to 3,200 price look-ups (compared with the 485 in the register's internal memory) and a data collector to store information from the register on magnetic tape. Sweda is on 01-253 3090.

Norwegian system

A microcomputer-controlled internal communication system, the Pamex MPC, has been introduced into the UK market by Cable and Wireless UK Services, 82-83 Blackfriars Road, London, SE1 1 (01-633 9577).

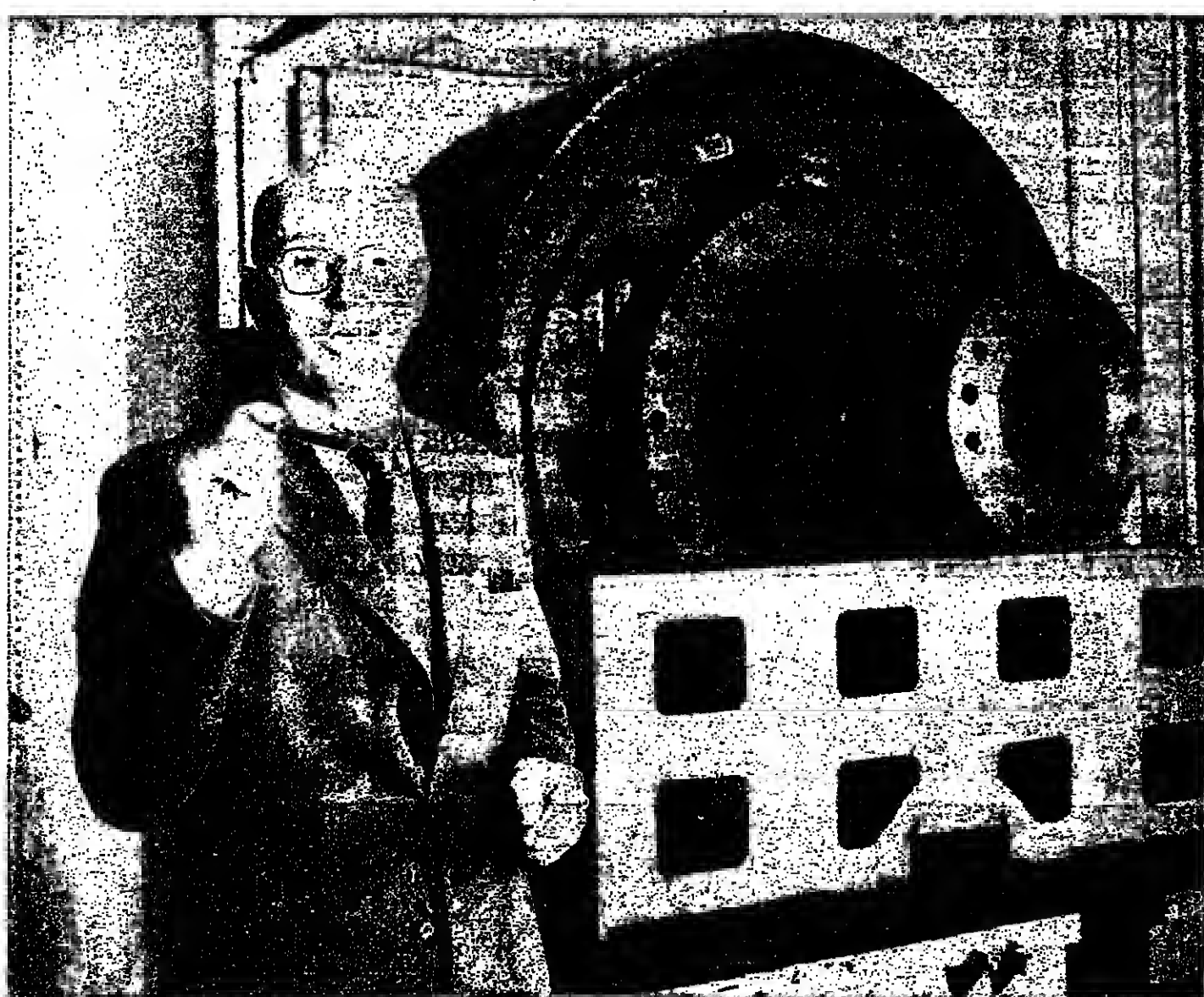
Pamex MPC is a further development of the Stentofon Pamex system manufactured by Stentor A/S, Trondheim, Norway. Two orders each worth more than £100,000 have already been received from Independent Television News and London Weekend Television, and the system is now being installed in their London studios.

The major advantage claimed for MPC is that changes, improvements and extensions can be simply programmed into the control panel without costly

and cumbersome additions to the array of hardware in the office. The new system also has space for more speech channels, thus enlarging the traffic capacity of the exchanges.

The 160- and 240-line exchanges can be equipped with as many as 12 speech channels and the 480- and 720-line exchanges with up to 23 speech channels. Such facilities as automatic callback and inquiry to a third person are also provided.

Post Office approval for the interconnection of private exchanges through rented telephone lines allows rapid, efficient and cost-effective links to be maintained between offices and factories throughout the country and also, in some instances, with overseas branches.



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For more information, write Victor L. Camposil, Vice President, Investor Relations, Hospital Corporation of America, One Park Plaza, Nashville, Tennessee 37203.

Hospital Corporation of America

هكذا من العمل

FINANCIAL TIMES SURVEY

Tuesday September 9 1980

Swedish Steel and Engineering

Sweden's hopes of putting a sluggish economy into forward gear are pinned to its engineering industry. As steel producers resign themselves to shrinking markets, engineering companies display remarkable confidence in their ability to lead the way by exporting their sophisticated technologies. But the traditional machinery of social and economic consensus has seized up, and there are worrying questions over profits, investment, and Sweden's labour laws.

Exports are the key to recovery

By William Dullforce
Nordic Editor

SWEDEN'S industrial production is stagnating and its current account deficit this year will probably surpass 4 per cent of its gross national product. It will borrow between SKr 25bn and SKr 30bn (\$6bn to \$7.2bn) from international banks in 1980. But only a very small portion of the loans will go to expanding production; the bulk is being used to maintain consumption.

1979 was a relatively good year for Swedish industry. Export demand was strong, company profits recovered, and by March this year the engineering companies were operating

at 87 per cent of capacity. But Swedish industry today produces no more than it did in 1974. And after a 20 per cent increase in 1979, expected to be repeated this year, industrial investment will still be lower than in the 1974-76 period.

This is the situation with which the three-party, non-Socialist coalition Government of Mr. Thorbjörn Fälldin is trying to grapple. It is an unusual situation for a country which, less than a decade ago, could still justly claim to be among the world's industrial leaders and which still has remarkable technological resources and business skills.

Sweden has of course suffered together with the rest of the industrialised countries from the increases in oil prices—perhaps more than most, since imported oil supplies 70 per cent of its energy requirements. Sweden's traditional exports—iron ore ships and steel—have also felt the impact of competition from the newly industrialised countries.

Yet there is also a specifically Swedish problem. The economic and social machine which functioned so smoothly through the 1950s and 1960s has become clogged. The smothering effect of a swollen public sector on industrial enterprise is one instance often quoted.

A recent symptom was the industrial dispute in April and

May this year which involved some 800,000 in strikes and lock-outs. More evidence of malaise came in the summer, when the Government was forced to call an extraordinary session of the Riksdag (Parliament), in order to raise value added tax by a modest 1.9 per cent—a measure which are retarding the industrial effort—and the Swedes have produced plenty of analyses of their own—one fact remains incontestable: Swedish engineering is crucial to the country's economy.

Raw material

With the raw material supply restricting the growth of the pulp and paper mills, Sweden has for years been looking to the engineering industry for a bigger and bigger export contribution. It has become a truism to call it the engine of the economy.

The Swedish steel industry, with which this survey is also concerned, is in a very defensive posture. Svenskt Stål, the commercial steel company, is shrinking to fit a reduced market. Although some of the special steel firms have reacted vigorously and aggressively to the slump which hit them in the

mid-1970s, it will be difficult for the branch as a whole to expand.

Hopes of getting the economy back on the rails rest firmly on the engineering industry. Can it respond? When the question is put to Mr. Roland Klessing, managing director of the Mechanical and Electrical Engineering Association, the answer is prompt: "We have the technology. The problem is to apply it and to find enough capital to introduce it."

The answer is echoed by one business leader after another. The debate over the lack of innovation, the decline in research and development, and the deterioration in educational standards has exercised politicians, academics and trade organisations over the past three years. But the major Swedish companies, at least, reflect a remarkable confidence in their ability to meet the technical challenge.

On the other hand, they are deeply concerned about finance, and most specifically about the difficulty of generating sufficient profit to keep pace with inflation and leave enough over for investment. Their worry is mirrored in the sluggishness with which investments have risen this year after the profit recovery of 1979.

One reason adduced for the sluggishness is that the profit recovery was insufficient. The average pre-tax return on equity among engineering com-

panies rose from 3.2 per cent in 1978 to 8.2 per cent last year, according to the annual survey conducted by the Swedish Engineering Employers' Association.

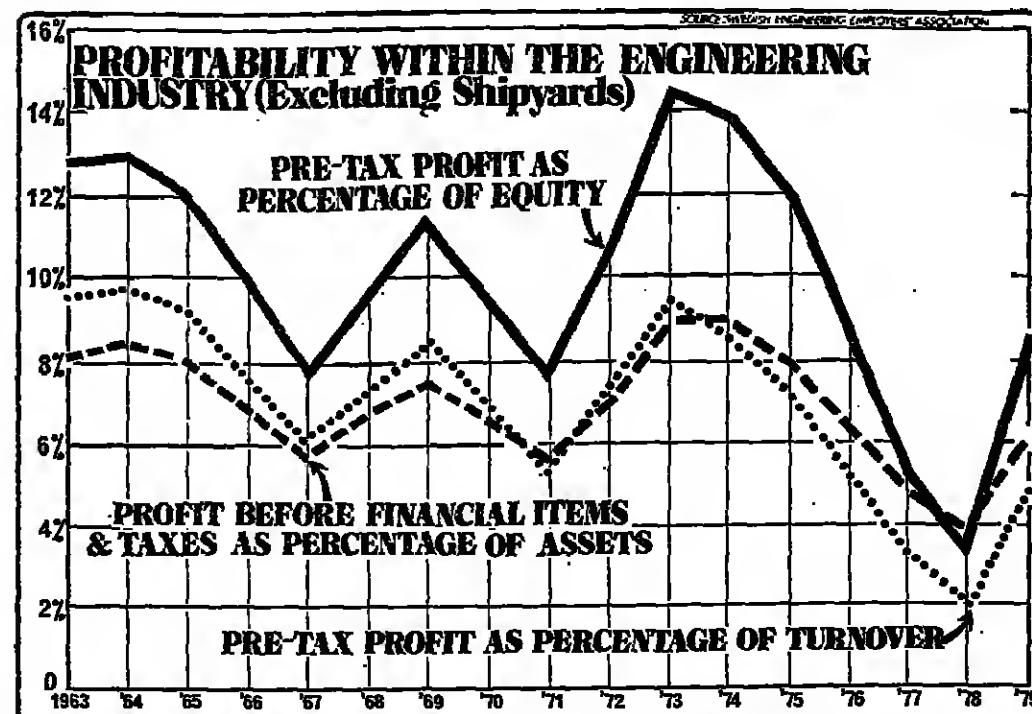
Mr. Aake Nordlander, the Association's managing director, comments: "The engineering industry had five years of declining earnings until 1979. We expect profits this year to be on roughly the same level as last and in an inflation economy companies need to earn more. We estimate that the return on equity should average 12 per cent through a business cycle, if we are to get expansion."

On the day that his company reported a slide in its second quarter earnings Mr. Pehr Gyllenhammar, managing director of Volvo, the car and truck group and Sweden's biggest industrial concern, wrote in a Stockholm daily about the need for industrial expansion.

Industrial loans

Investment had to be stimulated by improving company profitability, Mr. Gyllenhammar reiterated. This could be achieved by keeping wage increases low, by holding down public charges on company pay-rolls, by providing industrial loans on attractive terms and by maintaining favourable rules for depreciation of assets, he wrote.

Mr. Gyllenhammar's article



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young people to go into the factories rather than the social services or local government employ.

The unions representing the public sector workers fight hard to maintain equality of income with the industrial unions, even to the extent of obtaining guarantees in their pay settlements.

Absenteeism is a growing problem in Swedish factories. On average, 17 per cent of employees are off work and some companies reckon that they must overstaff by 25 per cent, in order to ensure regular production.

Recent research indicates that the absenteeism is not, as was thought, mainly due to workers unjustifiably exploiting sickness benefits, but to "legalised" absence from work. Many workers take advantage of the rights to study, go on union courses or stay at home with new babies which their union negotiators have won for them.

CONTINUED ON NEXT PAGE

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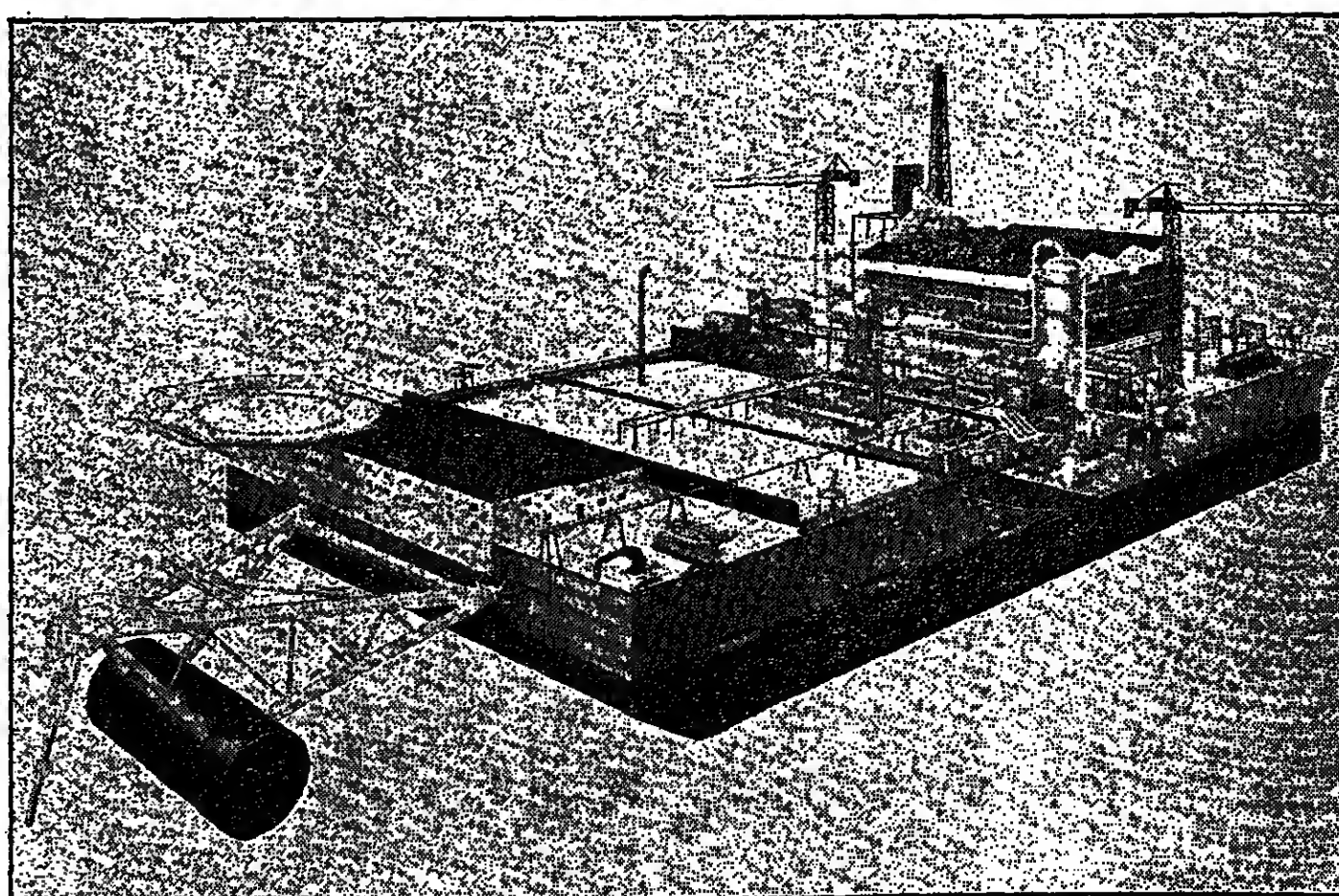
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SWEDISH STEEL AND ENGINEERING II

Industry's reconstruction threatens clash of interest

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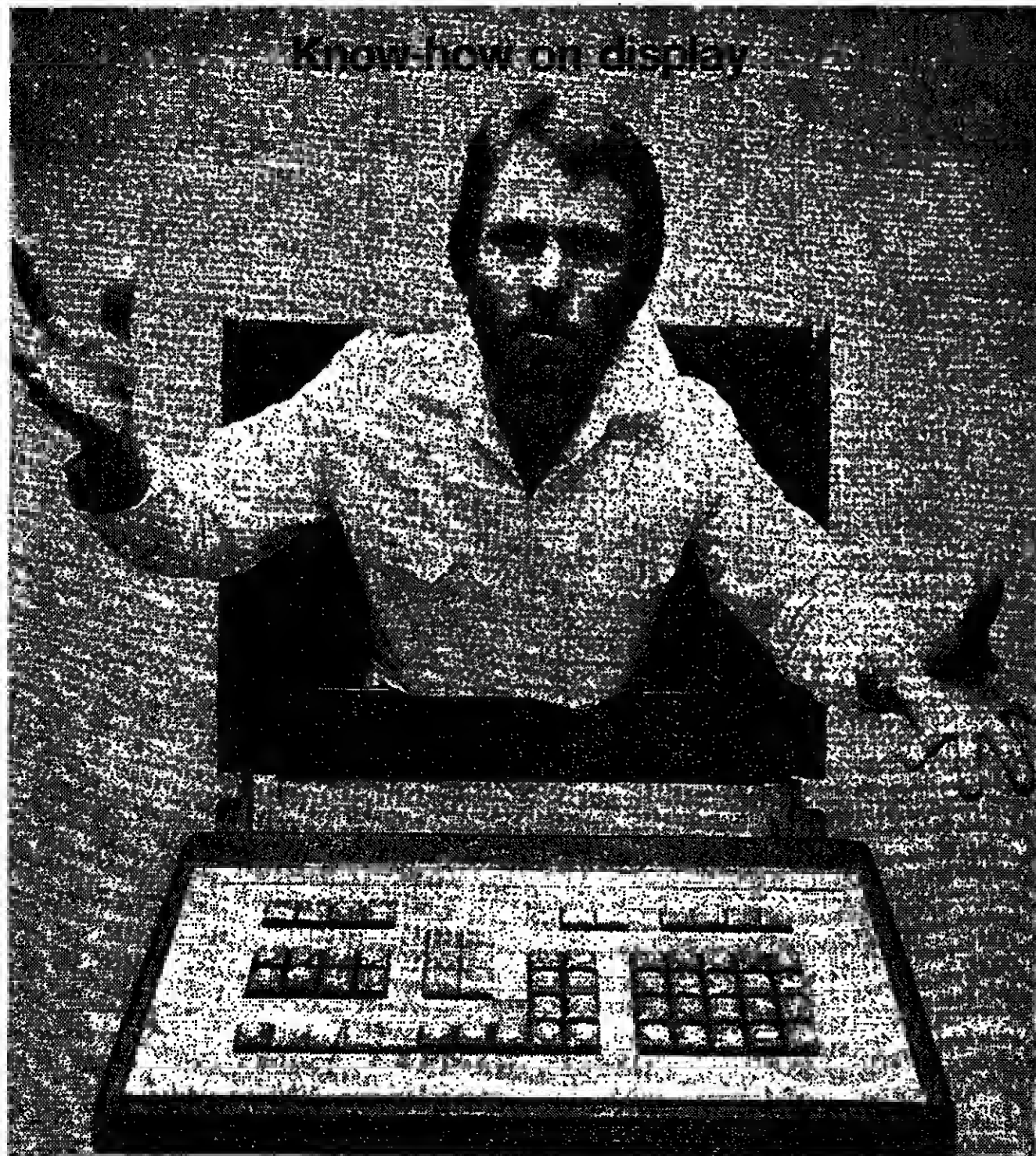
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THE SWEDISH steel industry is still in the throes of rationalisation, as it faces up to the downturn in the world steel business in the second half of this year and in 1981. It is already evident that the downturn has disrupted the reconstruction plans of Svenska Stål (SSAB), the commercial steel company set up in 1978. The company is now unlikely to reach its target of breaking even in 1982.

In the special steels, which weigh much more heavily in Sweden than in most other countries, the outlook is more promising. Some mergers, a rationalisation of output to obtain larger series and vigorous efforts to offer higher fabricated products and better service on export markets are taking effect. But even in special steels the strength and viability of some Swedish manufacturers remains to be proved.

Conflict

Moreover, the reconstruction of the industry threatens to produce a conflict of interest. SSAB's plan to turn its Domnarvets works at Borlänge into a modern scrap-based plant will greatly enlarge its need for scrap. In competition with the smaller commercial steel mills and some of the special steel manufacturers. The future scrap supply is currently a burning issue.

In the steel business, 1979 was one of the best years of the decade. Output, exports and earnings in the Swedish industry all improved. But the profitability analysis for the year published in July by Jernkontoret, the Swedish Ironmasters' Association, spotlighted the underlying weakness.

Profitability climbed by some 5 per cent overall in 1979. But the average return on total capital employed in the special steel companies was still a 1 per cent loss, while the commercial steel producers lost 5 per cent on their capital. It must in fairness be pointed out that in many companies rationalisation plans had still not given their full effect in 1979.

Sweden made just under 5m tonnes of crude steel last year,

of which over 30 per cent went to special steel manufacturing. Output of finished steel products 3.3m tonnes, valued at roughly SKr 10bn, of which exports accounted for SKr 7.4bn (SL7.7bn). Special steel sales abroad were just under SKr 5bn.

In volume terms, Sweden imported more steel than it sold abroad—1.83m tonnes against 1.83m tonnes. But in value, exports were more than SKr 3bn ahead of imports, thanks to the much higher added value in the stainless and alloy steel products. West Germany was the biggest export market, with the U.S. in second place and Britain in third.

As in most of the older steel manufacturing countries overcapacity remains a central problem. Even in a relatively good year, such as 1979, the 5m tonnes of crude steel produced were still some 2m tonnes less than capacity.

Largely through SSAB's restructuring, mills producing 1.5m tonnes are being closed but expansions by the special steel makers will add 500,000 tonnes new capacity. Thus even after the current reorganisation, Swedish steel capacity will still be around 6m tonnes.

Capacity utilisation is a key issue for SSAB. Last year it made 2.27m tonnes of crude steel from a capacity of 3.6m tonnes. The plan formulated would leave it with a capacity of 3.1m tonnes after 1981.

SSAB was formed in 1978, with the State taking a half share and two private companies, Granges and Stora Kopparberg—eager to get rid of steel operations on which they were making punishing losses—dividing the remaining half. Granges handed over its heavy plate mill at Oxelösund to the new company, Stora Kopparberg contributed its Domnarvets works, while the State added its steel plant at Luleå in north Sweden.

Under the programme submitted by SSAB's managing director, Mr. Björn Wahlström in May, 1978, ore-based steel production would be restricted to Luleå and Oxelösund. The blast furnaces at Domnarvets would be closed down, to be replaced by a modern scrap

steel plant, giving 400 tonnes a year.

The plan for Domnarvets also included a heavy investment in rolling capacity to produce thin steel plate, in which SSAB hoped to recapture a large share of the domestic market. Some SKr 1.5bn is being invested in Domnarvets.

This plan was from the first a compromise with political and social considerations. It is no secret that on a strictly business assessment, Mr. Wahlström would have preferred to have concentrated crude steel production at one of the coastal sites.

Target

Concern for unemployment restricted SSAB's ability to raise productivity and earnings by reducing the labour force. The target is to cut the number of jobs from 18,000 in January, 1978, to 14,650 in 1987. In return, the Riksdag (Parliament) allocated SSAB a restructuring grant to cover losses, in addition to investment loans totalling SKr 3.1bn.

Political problems, particularly opposition to the closing of the Domnarvets blast furnaces, have continued to hamper SSAB in executing its plan. In May this year, after the weakening of the steel market had been clearly signalled, Mr. Wahlström revised the plan to speed up rationalisation, reduce inventories and raise fresh capital by selling off some smaller group units. The second blast furnace at Domnarvets is now expected to be shut down next March.

Productivity, however, remains a major obstacle to SSAB's return to profit. Last year output per employee was 120 tonnes; under the rationalisation programme it would reach 170 tonnes at best. This compares with the 400 tonnes achieved in the Japanese mills and the 250 tonnes recorded in the better West German steel companies.

SSAB is falling behind its timetable for returning to profit and using up 400 quickly the SKr 1.5bn granted by the Riksdag to cover its losses until 1982. If lost SKr 1.08bn in the last two years and, although the management had expected

this year to reduce last year's loss of SKr 410m, the combination of market recession with the Swedish strikes and lock-outs in April and May make this a tough target.

In the longer term, too, SSAB's intention to regain a large share of the domestic market remains to be tested. In the thin plate market, which is central to its strategy, the Finnish company, Rautaruukki, has successfully moved in to fill the vacuum left by the withdrawal of the Japanese mills.

The investment in the reconstruction of SSAB will be about SKr 3bn by 1982. Will it be enough? From today's perspective, it seems likely that by 1982 SSAB will be asking for more public money, either to go ahead more trenchantly with rationalisation or, if the Riksdag so chooses, to continue as a loss-making concern providing jobs.

A consulting team from the Japanese Nippon Company, which recently studied SSAB's Luleå plant, advised that for a comparatively modest further investment crude steel output there could be raised to 2m tonnes with considerable economic benefits from larger-scale production.

This advice appears to clash with SSAB's over-capacity problem and its difficulty in finding markets. But suppose that the concentrate pre-baked crude steel making at one centre, and approached the private companies with the suggestion that they might look to Luleå in future for a major part of their crude steel?

The special steel manufacturers would not doubt oppose the idea. The development of new steel-making techniques, including those under trial in Sweden itself—could reduce the advantages of large-scale blast-furnace production. But the idea that the solution to the problems of Sweden's steel industry lies in closer cooperation between the State company and private companies is being discussed.

William Dullforce

Exports

CONTINUED FROM
PREVIOUS PAGE

A study, so far unpublished, of the time actually worked by industrial employees in a number of European countries is expected to show that the Swedes put in less time in their factories than any of the others. They also work less overtime, a result which may be connected with high Swedish taxation.

The job security laws, which make it extremely difficult to dismiss or lay off workers when business is bad and also hamper the transfer of workers from declining to expanding industries, provoke further grumbles from business leaders.

Mr. Perry Barnevik, ASEA's new and young managing director, has a refreshing attitude to the situation. "We can talk about how Sweden should be changed and that is an important topic, but as a company we have to live within that framework and be effective within it," he says.

Pioneer

ASEA offers an illuminating example of the current situation of Swedish engineering. Basically a heavy electrical engineering concern, it has a multinational spread and a wealth of technical developments to hand. It pioneered high-voltage direct-current electric power transmission; its rail locomotives are built in the U.S. under licence by General Motors. The parent company spends 7 per cent of its turnover on research and development.

But ASEA's profit record is mediocre. The return on "yield-demanding" capital has been a little over 7 per cent in real terms in the last two years. Like several of the other big Swedish engineering companies, its shares are heavily under-valued on the Stockholm exchange.

"The problem is to obtain growth," says Mr. Barnevik, reiterating at company level the dilemma for Swedish engineering as a whole. "Our asset is our technology but we have got to market it. Our future lies outside Sweden and we have to entrench ourselves in new markets."

To return from the company aspect to the national scene it is evident that the future of the engineering companies depends not only on their own technical and business efficiency but also on political and social attitudes. The vexed question is how the politicians can splice together Sweden's consumption and social expectations with the cost framework of an industry that has to compete on foreign markets. The Swedish politicians have not yet produced that new model.

Special steel makers ignore Government

OVER THE last two years the Swedish special steel industry has undergone a thorough shake-up. The Government has made available SKr 1.3bn (\$310m) in loans to facilitate the re-organisation, but—in contrast to its approach to the commercial steel business—it has not put in any equity capital.

Manufacturing of special steel has remained in the hands of private enterprise and the companies have worked out their own answers to the problem of declining earnings and shrinking markets which hit them in the mid-1970's. And despite help from State loans, they have not followed the Government's wishes as outlined in the report of a Commission of Inquiry into the special steel industry in 1977.

Negotiations for the merger of the steel interests of SKF Uddeholm and Fagersta, for instance, broke down. The product differentiation intended by the Government has not been fully achieved, although some mergers have taken place and the companies have worked hard at rationalising output.

There has, however, been a notable similarity about the strategies adopted. The emphasis has been on trimming product ranges to obtain longer series, while greater effort is put into meeting individual customers' requirements.

Paradox

This apparent paradox has been resolved by concentration on volume products, frequently at expanded centres, and by widening the company's trading activities, so that it can buy from other companies the components needed to meet customer's overall needs.

Traditionally, Swedish special steel manufacturers worked by prices per kilogram, offering a broad range of high-quality products with high added-value. Forced by rising domestic costs and foreign competition to increase volumes, they are compensating by more sophisticated marketing techniques.

All the larger manufacturers have also been investing heavily in new plant, demonstrating a remarkable faith in the future. But the weak financial status of some concerns must raise a question as to whether all the investment can pay for itself.

Two new groupings have emerged from the re-organisation of the industry. The Kinnevik investment company, which controls Sandvik, has, exchanging shares with another investment company,

also acquired control of Fagersta, Uddeholm; by merging its stainless steel interests with those of Granges, has formed Nyby-Uddeholm. It has a 90 per cent holding in the new group and has become the largest of the Swedish special steel companies by turnover.

Two large manufacturers, SKF STEEL and the Axel Johnson group, which owns the Avesta and Björneborg steel works, have chosen to go it alone, arousing some negative reaction in the process. SKF's expansion of its tool steel operations and its leasing of Bofors' special steel works has particularly angered Fagersta, while Avesta's investment in expanding its production of processed stainless steel sheet and plate overlaps Uddeholm's stainless steel interests.

Perhaps significantly, these two companies were the most profitable last year and promise to be so again this year. In fact, if the income from sales of subsidiary electric power operations is excluded, these were the only two companies to make money from steel operations in 1979. Both also belong to groups with strong financial resources.

Avesta has an annual stainless steel input capacity of 200,000 tonnes and can roll the widest stainless steel strip in the world. It is expanding both at home and abroad, having recently acquired a tube manufacturing company in Holland. A new unit, Axel Johnson Steel, is being planned, to trade worldwide in special steels. It will handle not only the group's own products but buy outside components to offer customers system solutions.

Mr. Karl-David Sundberg, managing director of SKF STEEL, has no misgivings about going it alone. SKF runs more than 600,000 tonnes of ingots per year through its two mills, has big volumes in its specialities and has just invested some SKr 250m in "the most modern electric steel mill in the world" at Hofors.

In 1977 SKF STEEL made a loss of SKr 150m; last year it earned SKr 65m before tax; this year, it expects to make some SKr 100m this year, even after losing about SKr 30m during the Swedish labour disputes in the spring. Mr. Sundberg attributes this recovery to the modernisation at Hofors and to a cost-efficiency drive which has cut the labour force by 400 at the same time as production volumes have grown.

Rebutting criticism of SKF's expansion into tool steels, Mr. Sundberg points out that the

company was already one of producers for its own bearing business and already selling tool steel to other manufacturers. But, he admits, the leasing of Bofors' tool steel facilities has given SKF "a flying start" in the business.

The co-operation between Sandvik, whose financial strength derives from its cemented carbide operations, and Fagersta, is designed to smooth the way for the rationalisation of Fagersta's rather fragmented product range. Sandvik is already the largest customer for Fagersta's high-speed steel and the tuba businesses complement each other.

But the biggest gain for Fagersta, it is estimated, could be in marketing. It will now be able to exploit Sandvik's highly developed world marketing apparatus and elaborate techniques for customer service.

Majority holding

Uddeholm, now the largest Swedish special steel concern with a turnover of around \$800m has gone through the most thorough transformation of them all. It has sold its pulp and paper operations to Billerud, has merged its stainless steel business with Granges' Nyby, established a tooling steel division, and joined Sandvik in a new subsidiary, Uddeholm strip steel. Sandvik later bought a majority holding in this company.

There is no doubt that Uddeholm needs time to shake down and to consolidate its finances. Last year the group moved out of the red, improving pre-tax earnings by some SKr 325m to a profit of SKr 3m. Mr. Åke Ahlström, the new managing director, has forecast "a positive result" in 1980.

In Nyby-Uddeholm the management is still working to sort out the product lines after the merger and to bring out the potential advantages of larger volume production. But the main message from Uddeholm management is a new marketing philosophy.

This has been pushed very strongly in the U.S., where Uddeholm has 24 service centres. These do not merely distribute but also offer quite basic technical advice. Uddeholm cannot compete in price with American steel manufacturers on individual steel grades, but it can attract customers by offering them a "total cost" solution, it is argued.

W.D.

SWEDISH STEEL AND ENGINEERING III

Industrial climate right for robots

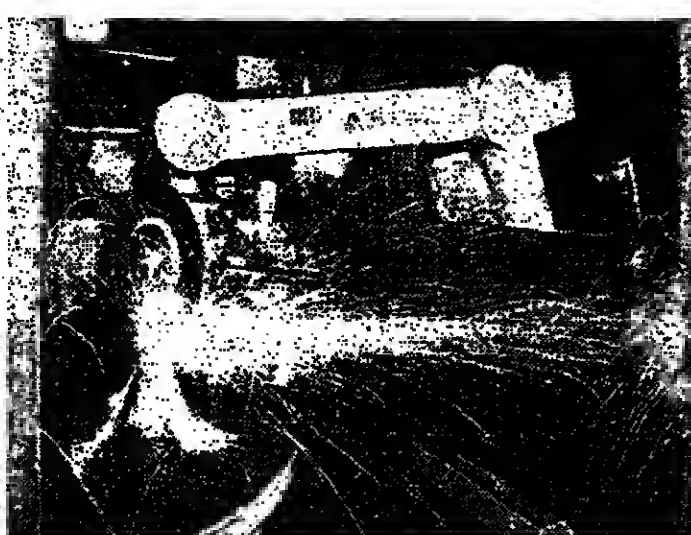
SWEDEN CAN fairly claim to be one of the most advanced nations in the world in the use of industrial robots. By the end of this year more than 1,000 robots will be operating in Sweden, giving it the world's highest robot ratio per head of population. The country has more than one-third of the robots at work in Europe; Britain, by contrast, has less than 200.

The Swedes are not only consumers. They have four robot manufacturers, of which one, ASEA, is among the three largest in the world. Another, Electrolux, is expanding rapidly from its home base. A third well-known Swedish company, Atlas Copco, recently bought up a small domestic company producing a paint-spraying robot. It is now aiming at a world market.

It was natural for Swedish companies to be among the first to exploit the opportunities of robots in the 1970s. High labour costs, a strong environmental lobby and trade unions, which were both extremely safety-conscious and well-disposed towards the introduction of more effective production methods, offered plenty of incentives.

Now the Swedes are conducting intensive research into flexible manufacturing systems, exploiting the facilities offered by robots, computers and numerically controlled machines. ASEA and the Institute of Engineering Research (IVF) in Gothenburg are developing a "production with limited manning" concept which could dramatically enhance the effectiveness of production systems.

ASEA's robots are linked to machine-tools in production groups which in daytime can be



An ASEA robot cleaning a casting. The robot picks up the castings fed to it on a roller conveyor and moves them to the correct positions for a rotary cutter and grinding wheel to clean them.

fully manned and carry out the more complicated operations. During evening and night shifts, which may be partly or completely unmanned, the robots and tools execute simpler operations. Production engineering of this kind not only cuts labour costs, it also enables expensive machines to be depreciated faster. This in turn should enable companies to keep up with investment in fast developing technology.

Industrial robots and the accompanying microcomputer technology are likely to be a determining factor for the future of Swedish industry. They offer opportunities for engineering companies to cut costs and retain the competitiveness which has been under increasing pressure during the last decade.

The robots can also provide valuable export income. As competition in the manufacturing of robots warms up world-wide, executives in both ASEA and Electrolux expressed in recent interviews their determination to retain their shares of the world robot market. This implies that they anticipate an expansion of some 30-40 per cent a year in exports.

Over the last two years the Swedes have been intensifying their introductory and training courses in robot technology for foreign customers both at home and abroad. Courses have already been held in West Germany, Holland and Switzerland.

As in most other countries the automobile manufacturers, Volvo and Saab, led the way in introducing industrial robots

into Sweden. But Electrolux was not far behind in developing robots to work on the production lines for its refrigerators and other household equipment. The welding of car parts, nevertheless, gave ASEA the first impetus for the development of its robots in co-operation with ESAB, the welding equipment company, in which it has a 50 per cent shareholding.

Extended

ASEA marketed its first robot with a 6 kg carrying capacity in 1973. Three years later it introduced the 60 kg model and has since improved the capabilities and extended the application ranges of these two basic units. It has sold some 800 robots altogether to more than 15 countries and during the past four years it has multiplied annual sales by 10. It is "certainly the largest robot manufacturer in Europe" according to Mr. Hans Skoog, the manager of the industrial robot business.

Sales last year amounted to about SKr 100m (\$21.5m), of which roughly two-thirds came from the 6 kg robot. Current capacity is over 400 robots a year and an expansion is already planned. About 80 per cent of sales are now being made abroad.

Last year it introduced a new capability to the robot. By responding to signals from sensors, it can now modify its paths and adjust automatically to new programme points, even during foreign customers' visits. The robot has been given "a sense of feeling" and can deviate when necessary from its programme without intervention by an operator. This is the first time such a facility has been made commercially available, according to ASEA.

Arc welding is still the largest

single application for ASEA robots and the new sensing feature should double or even treble this market, Mr. Skoog calculates. But the robots are tackling more and more jobs. The company's latest reference list shows that 69 of the larger robots have been sold for spot welding.

Electrolux's robot philosophy is somewhat different from that of ASEA. It has deliberately gone for an unsophisticated product.

The household appliances group makes two robots, senior and junior, both with pneumatic drives for handling materials, and loading and unloading machines. Their most prominent feature is a modular system, which has enabled Electrolux to widen the work range by gradually introducing new components, such as gripping devices.

Depending on the specification, an Electrolux robot costs between \$28,000 and \$43,000. Some 450 have been made, of which about 100 are used within the Electrolux group.

Earlier this year, Electrolux signed a co-operation agreement with Automatik Inc., a new advanced technology company financed by the Massachusetts Institute of Technology and Harvard University, which has a welding robot guided by a television camera under development.

Atlas Copco is marketing a paint-spraying robot, the Coat-matic, developed from the original design by Retab, a small company which it took over. The main feature is a floppy disc memory which enables the robot to repeat exactly the movement through which the operator has taken its manipulating arm.

W.D.

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JULY 1980

Vehicle makers step up marketing drive

TRANSPORT PRODUCTS have remained a major export staple of the Swedish engineering industry. Volvo, the truck and automobile maker, is the largest company in the country with sales amounting to SKr 23.5bn (\$5.62bn) during 1979. Of that amount, 76 per cent was accounted for by markets outside Sweden.

Saab-Scania, the aircraft manufacturer, also has a highly profitable truck division, and ASEA, the heavy electrical engineering group, produces locomotives and cranes.

It seems improbable that Sweden, a country of only 8.3m inhabitants, could be the home base for such a large engineering industry. The quality of engineering of Swedish transport products has been their main selling point. At one time, it was argued that the Swedes had become mere order-takers, lulled by the belief that their products were of sufficient quality to market themselves.

If the claim could once be justified, it is no longer true. With stiff competition arising from lower-cost countries producing in massive series and tightening demand, the companies have become more aggressive in their marketing. These manufacturers have turned to a strategy of selling increasingly specialised products, moving toward a systems approach, and entering into joint ventures to help offset research and development costs. In many cases the result has been successful.

Saab-Scania, for instance, opened the door to the civil aviation market this year through an agreement with Fairchild Industries in the U.S. to build a new commuter aircraft. It is the first European-American partnership for construction of a complete plane. It is a tailor-made product for a specialised—but expanding—market.

Turbo-prop

Designated the Saab-Fairchild 340, the aircraft will be a twin turbo-prop 24-seater with General Electric CT 7 engines. The demand for this type of aircraft over the coming decade is estimated at over 2,000.

The joint venture represents a challenge to such manufacturers as De Havilland of Canada, Embraer of Brazil, Britain's Short Bros. and Commuter Aircraft Corporation, Ohio. It was also a blow to Volvo, which has an important stake in the Swedish aerospace business. Its Flymotor subsidiary builds modified Pratt and Whitney engines for Saab's military plane, the Viggen.

Volvo has staked its hope on Saab choosing the Garrett TPE 331-15 turbo-prop engine, in the development of which Flymotor purchased a 15 per cent share earlier this year. At the same time it took a 3.8 per cent holding in the Garrett TPE 731-5 turbo-fan engine, which is intended to power Boeing's new 757 aircraft. (The twin co-operation pacts with U.S. engine makers are costing Volvo some

SKr 800m, including Government loans.) Saab also has a joint venture with British Aerospace for the short-take-off-and-landing BAC HS 146, in which the American Avco-Lycoming and Air Italia are participating. Saab's share of the deal involves manufacture of movable wing parts.

Both the Swedish companies must continue to strike for a balance of their military production with the development and manufacture of engines for civil aircraft. The two manufacturers have scored some success in another transport area, buses, where development and production complement their major truck businesses.

Last year the Scania (bus and truck) division of Saab sold over 2,500 buses, a 24 per cent improvement from the year before. Africa, South America and other markets outside Europe accounted for a 152 per cent sales jump, although the largest market continued to be the Middle East. Volvo recorded a 39 per cent sales improvement during 1979 for its bus sales against the year before, and has concentrated on marketing entire public movement systems.

As an example, Volvo recently signed a five-year contract with the Punjab Urban Transport Corporation to develop a public transport system for the city of Lahore, Pakistan. The contract involved more than a supply of vehicles, for Volvo was marketing a complete system for the city's 3m people. The system included planning routes, frequency of services, location of bus stops and even printing the time tables. Volvo will also train drivers, administrative and maintenance staff and will help the Pakistanis to establish a company to build bodies for the buses.

A separate subsidiary, Volvo transport systems, was created to handle this growing new line of business. First-time markets for Volvo buses last year included Angola, Singapore, Taiwan and Brazil. During the year production amounted to 3,500 chassis, 1,000 more than the year before. A new chassis, the B10m, was put into production in February with over 700 orders in hand.

Trucks, however, remain the most expansive and profitable business for both manufacturers, a trend which is expected to continue. To illustrate this, Saab car sales dropped 11 per cent in the first four months of this year, while Scania trucks recorded a 13 per cent sales increase. According to the latest available figures for Volvo, their truck sales development is similar. Both truck makers are looking to markets outside Europe for future earnings.

Both are among the world's largest exporters of trucks with a total weight of more than 18 tons. Some 88 per cent of Scania sales were outside Sweden last year, compared with 86 per cent the year before. Sales in Asia increased by 96 per cent during the year, followed by Africa, with 43 per cent. Iraq was the

largest Scania truck customer, importing 3,250 units in 1979. In Tanzania, Scania has a cooperation agreement with the National Development Corporation. The truck-maker continues to rely on its plants in Latin America to provide growth, and has factories in Brazil and Argentina, as well as worldwide component manufacturing is carried out.

For Volvo, truck sales last year increased by 24 per cent, and 29,000 units were delivered. Britain was the largest export market, followed by France and Sweden.

Volvo has set up a deal with freightliners in the U.S. for that company to distribute Volvo trucks in North America. Truck assembly will begin in the autumn at a new plant in Brazil.

Shortlisted

In addition, Peru has short-listed Volvo to assemble heavy trucks there under the Andean Pact agreement with Bolivia, Ecuador, Colombia and Venezuela, which aims to develop a regional motor industry. However, Volvo lost its bid for the medium-size truck project for which it was also bidding and which is expected to be allocated to Ford or General Motors.

Volvo International Development Corporation is a special unit set up at the group's Gothenburg headquarters to develop sales outside Europe and North America. It recently brought home a SKr 500m order for 1,600 Volvo trucks to Iraq over two years, and landed a deal in 1978 to sell 1,000 trucks to China.

Despite a reputation for quality, and specialisation into the highly selective luxury class personal car market, both Saab and Volvo have had problems with their car divisions over the last year. It is a problem shared with most other car manufacturers. But both have enjoyed some success in entering into joint ventures with other European companies.

Saab recently reached an agreement with Fiat/Lancia for jointly developing and manufacturing components without any current or planned ownership connection. It is claimed to be the first of its kind in the international automotive industry.

Volvo, meanwhile, last December signed a co-operation agreement with Renault, opening the way for the French automobile group to take a 20 per cent stake in Volvo's car business. (It has a 10 per cent share which can be doubled.) In quite another area of the transport equipment business, ASEA has had success in selling high-speed, lightweight locomotives. Last spring Antrak, responsible for nearly all the inter-city rail passenger services in the U.S., placed an order with ASEA for another 17 locomotives of this type.

In all, these Swedish companies seem able to compete in selling their transport equipment products abroad, but the largest obstacle to success will remain the question of cost.

Westerly Christner

The flash of genius that means a brighter outlook for the world's steel industries.

When a flash of lightning streaks across the sky enormous quantities of energy are released. What actually happens is that the atmosphere is ionized and a plasma is formed. A plasma in which the temperature can go as high as 25,000°C.

There are many examples of natural plasmas: the sun is a plasma, so is the "aurora borealis" (the Northern lights). Artificial plasmas can be produced with the aid of a plasma generator. A gas is heated to extremely high temperatures at which it ionizes, viz. it is converted into a plasma. Enormous quantities of energy can be supplied to the gas in this way.

Plasma generators have principally been developed in the US space research program.

During the seventies we at SKF Steel have carried out extensive research projects into the application of plasma technology to the production of iron and steel. These research activities have opened up exciting new ways of overcoming the serious problems currently faced by the world's steel industry.

PROBLEMS OF THE WORLD STEEL INDUSTRY
In many countries around the world the iron and steel industry has suffered from serious problems over recent years. A primary reason is that the traditional blast furnace process has developed so that it is now most definitely one with substantial economies of large-scale production. Countries with small domestic markets, of which Sweden is one, have not been able to take advantage of this progress.

Currently many blast furnaces in operation around the world have individual capacities that are higher than the total national capacity of countries such as Sweden, where incidentally, production takes place at no less than eight blast furnaces. Ironworks using scrap iron and steel as input raw materials, especially special steel works, also face problems owing to the steadily deteriorating quality of the scrap. This can be offset by increased use of sponge iron instead of scrap. However, this remedy is today only economically feasible where large supplies of cheap natural gas are available.

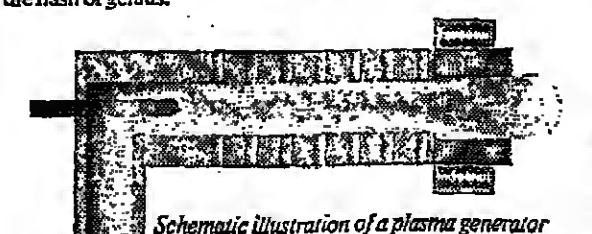
Small countries without natural gas which need to restore the competitive position of their steel industry, economically as well as qualitatively, therefore need to develop new types of reduction processes to match their specific local conditions.

WHAT ADVANTAGES SHOULD THE NEW PROCESSES HAVE?

The centuries-old blast furnace method must be replaced by a new process which makes it economical to manufacture crude iron on an appreciably smaller scale than is permitted by current blast furnace technology. In addition, the cost of the crude iron must be reduced, energy consumption lowered and environmental problems solved.

We must also develop a new sponge iron process which can make economic use of other types of input energy than natural gas, for example coal or oil.

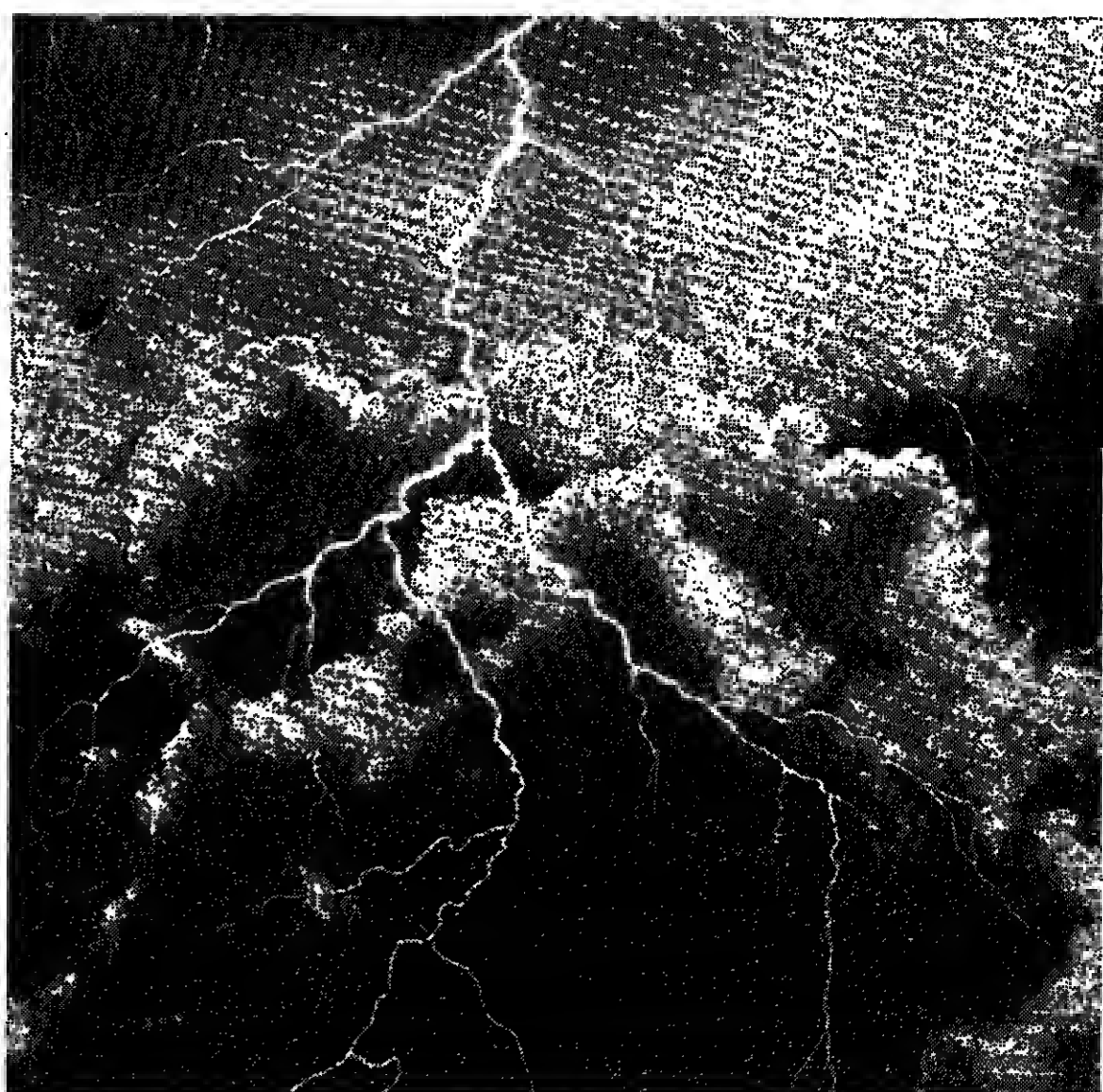
THE FLASH OF GENIUS
The solution to these problems is called plasma technology. It possesses elements of what can candidly be called genius. It is unique. It is unconventional. It is extremely simple. As so often is the case, the simplest solution is the one that is inspired by the flash of genius.



On the basis of plasma technology and the results of extensive pilot-scale trials in a special experimental steel plant at Hofors, in Sweden, SKF Steel has now developed several new metallurgical processes with superior performance characteristics.

Two of these processes, which we would like to describe here, are called PLASMARE and PLASMAREL. Both are protected by patents and are based on the same simple basic technology—the plasma generator. They offer major opportunities for "cross-fertilization" in the future development work on the plasma-based processes.

PLASMARE FOR PRODUCTION OF SPONGE IRON
The PLASMARE process for sponge iron production cuts energy consumption and allows considerable freedom of choice as regards type of input energy.



PLASMARE has been operating on a pilot-scale for three years at SKF Steel's experimental plant, and with extremely successful results. SKF Steel has therefore decided to convert the existing sponge iron plant at Hofors into a PLASMARE plant.

International interest in PLASMARE is considerable. Mainly thanks to its low energy consumption, freedom of choice of input energy, and the fact that the process can be used at new or existing sponge iron plants.

PLASMAREL FOR PRODUCTION OF CRUDE IRON
The specific features of the plasma generator also make it highly suitable for the production of crude iron by smelt reduction. So, parallel to the development of the PLASMARE sponge iron process up to full-scale, we have also been conducting extensive research into the development of a crude iron production process—PLASMAREL—based on smelt reduction by means of plasma technology.

This process offers many advantages over the blast furnace process. The manufacturing cost of the crude iron is cut by 20%. Energy consumption is 25% lower in PLASMAREL than in a conventional blast furnace.

The high energy intensity inside the plasma generator means that the furnace volume can be reduced compared with a blast furnace. In addition, peripheral equipment requirements are minimized. This makes a substantial difference in the capital investment cost. Using PLASMAREL, the production of crude iron becomes economical at 250,000 tons per year. Nowadays, blast furnace production of crude iron is only economical at annual rates of 2,000,000 tons or more. Capital investment in the two cases: US\$38 mill. for PLASMAREL (250,000 tons/year) compared with US\$720 mill. for the blast furnace complex (2,000,000 tons/year). This implies that the investment in PLAS-

MAREL is less than half of that for the blast furnace for a given capacity.

In addition to this, it should be remembered that PLASMAREL makes a minimum impact on the environment compared with a blast furnace process. Furthermore, PLASMAREL offers a flexible choice of input energy types.

Finally, a further advantage is that existing blast furnaces can be converted into PLASMAREL units. This means even lower capital investment costs and better operating economy.

BRIGHTER OUTLOOK FOR WORLD'S STEEL INDUSTRIES

Plasma technology offers a good example of the advanced metallurgical processes that are being developed by SKF Steel. Research and development projects in SKF Steel have already resulted in new processes that are not only used in our own iron and steel plants, but that have also been sold to a great many steelworks around the world.

It is therefore with good reason that we can say that plasma technology means a brighter outlook for the world's steel industries.

SKF Steel Engineering AB

Box 202, S-813 00 Hofors, Sweden, Telephone: 46 (290) 218 00.

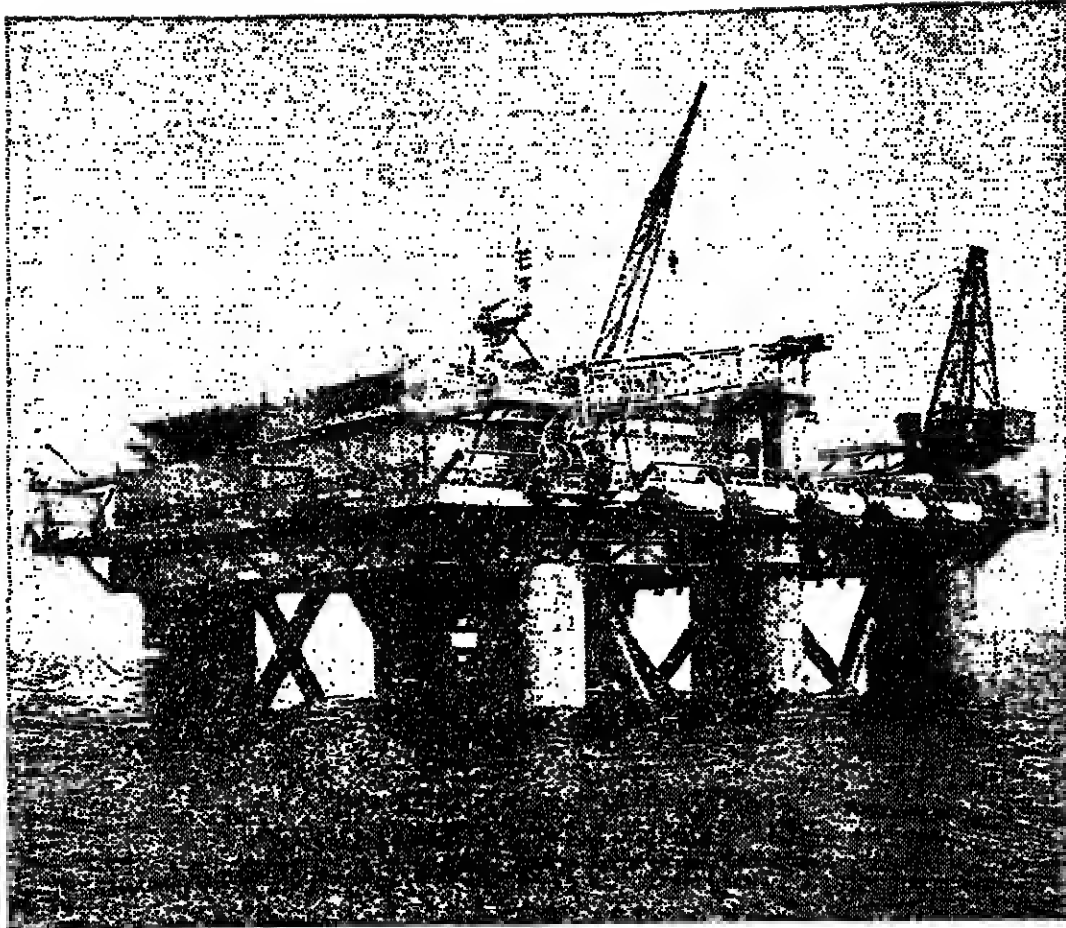
SKF Steel Engineering AB is the unit in SKF Steel that is responsible for the development and application of new methods in iron and steel making.

SKF Steel is the special steel company in the SKF Group of companies.

SKF Steel is represented by subsidiary sales companies and agents in all parts of the world.

SWEDISH STEEL AND ENGINEERING IV

Search for cheaper iron production



This is "Safe Concordia", the second in a series of accommodation and service rigs. The safety, high technical standards and comfort built into these structures make them the most advanced semisubmersibles in the North Sea.

SWEDEN is currently in the remarkable position of having no less than three new processes for the manufacture of liquid iron under development. They have emerged simultaneously but independently and, in the words of Mr. Hans Sticker, the man in charge of ASEA and Stora Kopparberg's Elred, they promise to "break the hegemony of the blast-furnace."

All three processes aim at lowering the costs of producing crude iron, thereby opening the way for cheaper steel. By eliminating the coking and sintering needed in the blast-furnace process, they reduce both capital costs and environmental problems. They are also designed to save energy and offer greater flexibility in the type of fuel used.

The Swedes' search for a cheaper and more efficient method of producing liquid iron parallels the more advanced development of sponge iron or directly reduced iron (DRI) technology. DRI is primarily a complement to or substitute for the scrap iron used to feed electric arc furnaces. Demand for DRI is growing fast, as more and more steelmakers turn to electric arc furnaces and world scrap supplies are likely to become inadequate.

But DRI is highly energy-intensive and is at present most economical when cheap natural gas is available. Sweden has no natural gas, although a determined effort is now being made to persuade the Norwegians to supply gas from the North Sea. It was therefore logical for the Swedes to look for cheaper ways of producing liquid iron like that obtained from a blast-furnace, which can be used for making steel in an oxygen converter.

One drawback to blast-furnaces is that they need to be extremely large to produce iron economically. Even with the refinements that the Japanese have recently introduced to blast technology, an output of about 1.5m tonnes a year appears to be the minimum required. The Swedes were accordingly looking for techniques to produce liquid iron on a smaller scale, but at a cost competitive with the massive blast-furnaces of the Japanese. Sweden's special steel manufacturers do not require large supplies of crude iron. Moreover, the attraction for developing countries of a small-scale iron and steel process with a low capital investment had not escaped the Swedish companies. Three of them—ASEA, in cooperation with Stora Kopparberg; SKF; and Boliden—have

independently built pilot plants based on different techniques, which all appear to live up to these specifications. Cost savings of between 20 and 30 per cent are claimed in the production of liquid iron.

But the crucial step remains to be taken. The processes have to be proved fit for commercial production in demonstration plants. In making iron, the jump from the laboratory or pilot plant to full-scale manufacturing is especially critical because of the high melting point of iron, the tendency of the iron-reducing additives to "stick," and the effects of the slag produced on the materials used in the furnaces or reactors.

Experience

Swedish metallurgists have long experience of these difficulties. Several Swedish iron and steel making inventions—the Kaldo furnace, the ASEA-Stora process for high-alloy steel—have been very successful. But failures when scaling up promising innovations have been numerous. Moreover, the risk capital required for a demonstration plant also involves a giant leap.

The Industrial Fund has set up a committee of three professors to evaluate the new techniques, while a foreign consulting firm has been engaged to examine the market prospects. But, as Mr. K. G. Bergh, director of research at Jernkontoret says, at this stage no expert could advise that investment be concentrated on one of the processes without running the risk of misjudging the potentialities of the other processes.

The companies in any case do not appear to lack offers from steel manufacturers abroad to help finance development. American and Japanese companies in particular have shown interest and all the Swedish companies express determination to put their new processes

to the test.

ASEA claims that the ELRED method which it has developed jointly with Stora Kopparberg is furthest forward.

ELRED is a two-stage process, the first entailing pre-reduction in a reactor of fine-grained iron ore concentrate and dust coal, the second involving the final reduction to liquid iron in an arc-furnace at 1,450 degrees Centigrade.

The ELRED method resembles an enclosed system. Slag and five gases are the only waste products. The gases used for reducing the iron are generated within the reactor, eliminating the need for a separate gas reduction plant. The gases are also used to drive turbines, producing not only sufficient electricity for the processing of the iron but also providing a small surplus. This is said to be a significant factor in reducing costs.

Coal is the only energy source and almost any type of coal may be used, it is claimed. The steel division of SKF, the bearings group, has adapted plasma technology to iron making. Plasma is the state of ionisation to which gases are transformed when heated to very high temperatures. Plasma generators were developed during the U.S. space research programme to simulate the temperature conditions which would face the nose cones, heat shields and rocket nozzles of space capsules.

Using plasma generators, SKF Steel has developed two metallurgical reduction processes. PLASMARED reduces the amount of energy needed to make DRI and allows greater freedom in choosing other energy sources than gas, for instance coal. SKF is already building a 70,000-tonne PLASMARED plant to produce sponge iron for its Hovors mill and reports "tremendous interest" from abroad.

Its second method, Plasma-smelt, is a two-stage process

Total steelmaking costs in \$/tonne

Cost comparison of ASEA's and Stora Kopparberg's ELRED process with current steel production methods

	Blast furnace (sinter)	ELRED*	Shaft furnace (sponge iron)
Iron raw material*	51.6	33.5	60.0
Energy†	54.4	16.8	47.6
Processing‡	37.5	38.0	51.6
Capital costs§	39.0	45.7	44.3
Unforeseen costs	—	11.0	—
Total steelmaking costs, \$/t	132.5	145.0	203.5
Relative total costs as a percentage	100	80	112

* Concentrates and pellets, respectively, alloying elements, cooling pellets, scrap.

† Coke, coal, oil minus energy credit plus electricity in steel mill (\$18/t).

‡ Labour (operation, repairs and maintenance); electricity, electrodes, lime, oxygen, refractories, desulphurising (for ELRED).

§ For the ironmaking and steelmaking plants.

Source: ASEA

like ELRED, producing liquid iron. It is claimed to entail a capital investment for a given capacity of less than half the investment in a blast-furnace and to produce hot metal economically at outputs of only 250,000 tonnes a year.

SKF has conducted trial runs of this process with 0.5 megawatt and 1.5MW Plasma generators. The next step planned is to build a half-scale plant of 15 MW and with a capacity of 60,000 tonnes liquid iron or ferro-alloys a year at the Hovors mill.

Boliden, the metals and chemicals group, claims that its INRED system will be the cheapest measured in total costs per tonne of iron. It has been developed from flash-smelting techniques used in producing metals and was originally

designed to make liquid iron of good quality from fine grained pyrite cinders containing several impurities.

It too is a two-stage process and needs only solid fuels, such as coal. It comprises a steam generating system with an integral flash-smelting chamber, an electric furnace and a power plant combined with an oxygen plant. Finnish boiler-making skills have been applied.

Boliden has produced 250 tonnes of hot metal in a pilot plant which reached a capacity of three tonnes an hour. It now plans to go ahead with a demonstration plant capable of producing eight tonnes an hour, according to Mr. Torsten Jönell, the research director. This plant will be used to test other applications for the process.

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Building offshore oil equipment aids shipyards

SINCE 1974, Sweden's shipbuilding industry has suffered an almost continuous decline, as the worst slump for world shipping in at least half a century proved to be more than just part of an expected periodic three- to four-year cycle. It has been an especially bitter pill to swallow for the country's private shipyard executives who, in the late 1960s, could boast that Sweden had total orders second only to Japan.

Today this now-nationalised industry can finally see some improvements. This has come about largely because of the shift away from the building of traditional types of vessels (including oil and product tankers) for stock, and the steady expansion of what politicians call "alternative production." They claim this category includes offshore structures such as oil rigs, accommodation platforms and floating prefabricated processing plants. Many shipyard executives, however, say there is nothing unconventional about offshore industry production and tend to shy away from the great claims associated with the word "alternative." Many are questioning whether the yards can survive as a whole on the basis of this new brainchild: certainly the going has been tough until now.

During the last three years, the non-Socialist coalition Government has spent over SKr 15m (\$3.6m) to keep the shipyards operating. Even so, the workforce has been cut back by at least 9,000 during this period. Increasingly the trend has been to maintain some permanent staff and to hire extra workers on a project basis.

Refinancing

Svenska Varv still lost SKr 5bn over the last three years, several major loans had to be refinanced, and the group is not expected to show a profit before the middle of this decade. A shipowning company within the group, Rederi AB Zenit, which was originally started by the Göteborg shipyard group in 1932, has taken over at least 25 vessels in which Svenska Varv had interests.

As a result of far-reaching Riksdag (Parliament) Bill passed last Spring, Svenska Varv received what was said to be the last aid available. The Government contributed SKr 3.2bn towards the further restructuring of the yards' activities, with a promise from the group's management that yards which were kept open would again be operating at a profit by 1985.

The present workforce of 19,000, even with "alternative" production, will be cut back to 11,000 between 1980 and 1984. State subsidies of various forms are also due to be withdrawn

gradually, and completely phased out by the end of 1983.

Of the SKr 3.2bn aid, SKr 1.45 bn has been earmarked for the closure of Öresundsvarvet AB, the only major industry in the town of Landskrona—and of the small AB Finnboda Varf, a Stockholm repair yard. The Government admits, however, that it does not actually know how much it would take to cover these shutdowns, if and when they come about.

Both yards are still in operation. During the Spring vote, the Riksdag defeated a proposal by Mr. Nils Assling, the industry minister, to close Öresundsvarvet by a margin of only two votes.

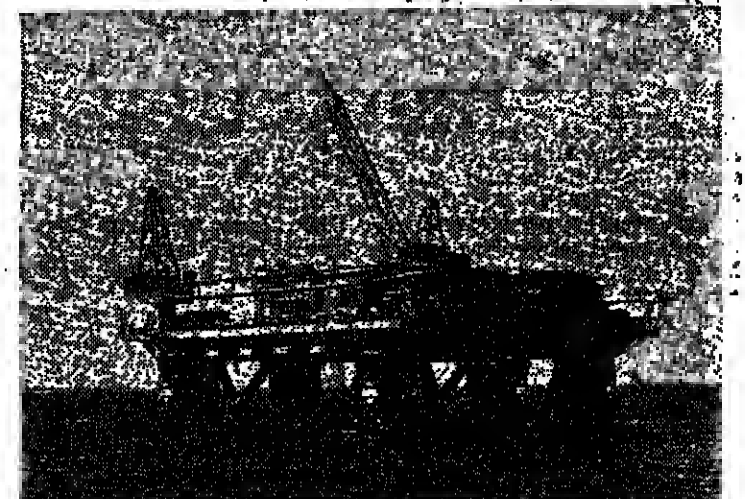
According to the BILL, Kockums is now supposed to concentrate on the production of gas and chemical carriers and pre-fabricated processing plants, including modules for them. Götaverken Arendal AB, in Gothenburg, will continue with products for the offshore industry and will co-operate with Kockums on developing pre-fabricated plants and modules.

Uddevalle is to specialise in the output of tankers, bulk carriers and unladen cargo vessels. And Götaverken city yard in Gothenburg will continue as a dry dock/repair yard. In all, SKr 800m was designated in the Bill for product development—an amount said to be modest for covering the 1980-1984 period.

The two yards geared to new types of production, Kockums and Arendal, now say their expertise is sufficient to develop many projects without outside engineering and other technical advice, although some experts are willing to debate this point. Orders are co-ordinated through Svedyds Development Corporation, the group marketing unit (which has also received a portion of the development money). The yards also have the advantage of being able to cover contracts within a State-owned group.

"Traditionally business has been transacted between private companies but now, with more of the developing countries becoming customers, the trend may be towards more state-to-state deals," says Mr. Per Dahlgren, marketing manager for Kockums' vessels division. The division has received no orders to date, however. The yard's main problem in moving into new lines of business is the difficulty of penetrating specialised markets and of proving to potential clients the order can be handled without specialised experience.

Two years ago the vessels division won an order from the Panamian subsidiary of a Lebanese company, Libexim, for three cement distribution barges. The contract was secured on a private basis by Kockums. But the yard's only



The Götaverken Arendal yard has produced such specialised offshore units as this accommodation and multi-service rig, for North Sea employment, delivered in June.

other so-called alternative production order—a very large contract estimated to be worth between SKr 1.6bn and SKr 2bn for an ammonia/urea plant for the Pakistan Atomic fertilizer corporation—has been hampered by financing difficulties.

On the other hand, Arendal seems to have penetrated at least one new and expansive market: the offshore industry. The yard is the Swedish licensee for Friede and Goldman, a New Orleans-based engineering firm, to produce its Pacesetter drilling rig. It is claimed to be superior to the B3 rig produced by the Norwegian Aker group because of its greater loading and security capacity.

To penetrate the Norwegian offshore market more thoroughly, Arendal has just signed a technical co-operation

agreement with Frammaas A/S in Sandefjord. This company has produced other variations of the Pacesetter rig, also on licence from Friede and Goldman.

Arendal has had success in other areas of offshore production. Two years ago it received its first order for two accommodation platforms, delivered to another Gothenburg-based company, Consafe Offshore. Later another platform order was secured from the firm with an option for a fourth. The yard also has two separate orders for jack-up rigs.

With the present backlog of orders, Arendal can ensure full employment through 1982. It appears that this yard at least will be able to compete successfully with continental Europe, America and the Far East.

Westerly Christner

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THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

Management abstracts

These summaries are condensed from the journals of abstracts published by *Abstracts in Management*. Readers wishing to consult original texts should write to: PO Box 23, Wembley, HA9 8DJ.

How Work Disrupts Private Lives

F. Bartolomé and P. A. L. Evans in *Harvard Business Review* (U.S.A.), March/April 1980; p. 137 (12 pages).

Based on a survey, finds that executives whose private lives deteriorate are subject to work-related negative emotional feelings which spill over into family and leisure time; offers suggestions for managing "spillover" and looks at the role of the organisation in reducing work pressures.

Identifies ways in which host governments are increasingly limiting the strategic freedom and threatening the managerial autonomy of multinationals, and discusses how they can respond to such restrictions, examines the sources of bargaining power available to both parties, and suggests organisational adjustments multinationals can make to co-ordinate their responses and maintain flexibility of action.

Office Automation. T. M. Lodahl and N. D. Meyer in *Administrative Management* (U.S.A.), March 1980; p. 32 (54 pages). Defines various pathways to office automation, each seen as a starting point for information procedure change — e.g., text handling, filing and retrieval, telecommunications, and decision support schemes — and outlines their advantages and disadvantages.

Holidays for Managers. R. Finder in *Manager Magazine* (Fed. Rep. of Germany), April 1980; p. 66 (3 pages, in German. English version available).

Investigates the extent to which — over recent years — the managerial privilege of longer holidays "has" been eroded, and asks what can be substituted (with some factual examples). Stresses the growing number of managers who cannot or will not even take the holiday they are entitled to.

Warning: paperwork can damage your health

In the first of two articles on the use and misuse of information, Lionel Wardle argues for a radical reappraisal of existing systems

TOO MUCH paperwork makes managers and organisations tired, sluggish and inefficient. Just keeping it circulating can absorb up to 50 per cent of the available time and energy.

The symptoms are usually apparent to all: the overflowing in-tray, the number of memos, reports and other documents to be written and read, the amount of paper to be handled to do even a simple job.

Less well understood are the causes of excessive paperwork and the debilitating effect it can have on performance. Managers complain about paperwork but they do so in a way that suggests it is endemic to the job. It is as though they believed that somewhere the "Great Spirit" had ordained that they should be afflicted in this way. It's a price to be paid for the lascivious pleasures they enjoy; a thing to be suffered and endured rather than changed.

Their attitudes in this are remarkably similar to those of a primitive tribe plagued with a chronic ailment.

The main difficulty in persuading management to tackle the disease lies in convincing them that it is serious, that it would be in their interest, and profitable, to devote resources to solving it, and that it can be cured.

Many managers attribute excessive paperwork to the behaviour of individuals, for example, to the man who produces paperwork to cover himself in case anything goes wrong, the type who believes that his performance assessment will depend on the volume of paper he produces, or the individual whose motto seems to be "if it's in writing, it's important."

Although this explanation is attractive to management, since it shifts the blame elsewhere, it won't do. Individual behaviour accounts for only a small part of the paperwork problem and the explanation confuses symptom and cause.

There are three factors which account for the bulk of unnecessary paperwork. The first is the use of systems and procedures for getting work done which are neither efficient nor effective.

A good illustration of how an ineffective system can generate paperwork has been provided by Marks and Spencer. When assistants wanted to restock their counters they had to write out in triplicate a requisition

for the goods they required. They would then queue at the stock room with other assistants to obtain the goods they needed. It was only when the chairman went round some of the stores and found frustrated customers waiting to be served that the objectives of the exercise were queried.

The system had been introduced to monitor and control stocks and reduce pilferage. A new system was introduced whereby assistants simply went to the stock room and helped themselves to the goods they needed. As a result of the change not only did the company get rid of a warehouse full of documents, they also saved themselves a lot of money. (Stock control was carried out by the area manager and the assistants themselves).

Using paperwork to control or supervise operations is a second factor that accounts for much unnecessary paperwork. For example, following an incident which resulted in a generator being burnt out, engineers were required to make daily measurements and records of the condition of the insulation on all electrical plant.

To ensure that they were carrying out their duties as required they were told to send the data to the office at the end of each month for review by the manager. For three years 25 engineers spent their time compiling thousands of pieces of data which provided little or no information.

Stand trial

This example points to a similar source of unnecessary paperwork: those systems set up in response to one-off situations which are allowed to continue long after their original purpose has disappeared.

Given the other calls on a manager's time, it may seem unrealistic to say that all paperwork systems should stand trial for their lives at least once every five years. But you can choose. You can either spend a lot of time pushing paperwork around, or you can spend some time cutting it down to size. One thing is certain: left to itself it just continues to grow.

Underlying most other sources of unnecessary paperwork is the confusion of data with information. Data only become information when the manager can use them for mak-

ing decisions or guiding a course of action in relation to the objectives he wishes to achieve.

An example of how data and useful information can be confused is provided by a company's overtime monitoring and control system. The main objective of the system was to ensure that any overtime worked was cost effective. So data was collected on the amount of overtime worked and the cost of the overtime, with time sheets, weekly and monthly summaries, details of how much overtime was worked by individuals, sections and departments, including when the overtime was worked and what the work was.

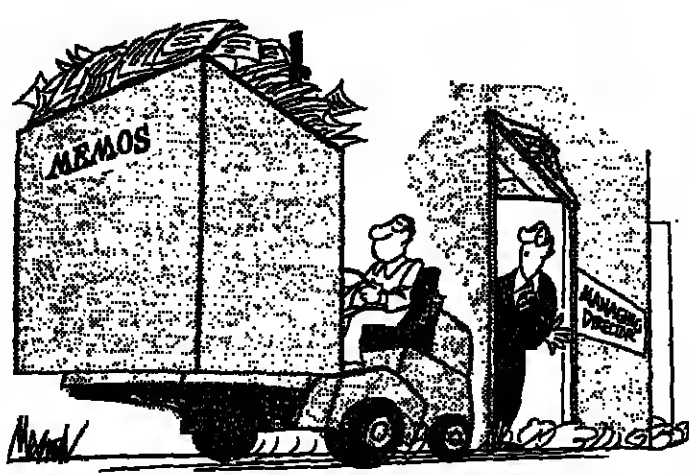
Despite all this data the company still could not say whether or not overtime was cost effective. It had no information on what the overtime achieved.

Another case illustrates a different aspect of the problem. This relates to the collection of data on boiler water quality. Engineers were required to check and record on a daily basis the level of impurities in the boiler water. If the permitted levels were exceeded then the effects were neutralised by adding chemicals. Each month this data had to be collated and sent to management for review.

Following the review the management then sent it to a firm of boiler water specialists for a second review. In all, some 10,000 pieces of data were collected and reviewed in this manner each year. After the system had been operating for a number of years the question was raised as to the information obtained from this data. In other words, what use was made of it? The system was discontinued.

The ready availability of computers will increase the temptation to collect masses of "interesting" but useless data. The only way to suppress this impulse is to keep asking questions like "How will you use the data?" "What would happen if you did not get it?"

There are several tests a business or organisation can apply to determine whether or not it has a paperwork problem. A simple one is to establish how many letters, cables, photocopies or other forms of written communication pass in and out each week. Assume that it takes two minutes to read each cable or photocopy and 10



minutes each to read and reply to a letter. Calculate the total manhours spent on these activities. Then, depending on the nature of your business, you can decide whether or not you have a paperwork problem.

Another method which is quite effective is for the chief executive to ask for a copy of every form or document that is handled by his staff in a given week. With it all piled up on his carpet he won't need anyone to tell him whether or not he has a paperwork problem.

A well designed programme to reduce paperwork should pay for itself several times over solely in terms of the manhours it saves in reduced handling and processing. This may seem to be a bold claim but it is justified by practical experience.

But more important than the money to be saved is the benefit to be gained in creating the opportunity for staff and management to work more effectively on the things that matter. When a manager is up to his backside in paperwork it's easy for him to lose sight of the essentials and to confuse the urgent with the important.

The benefits to be gained by being able to work more effectively are well illustrated by a study carried out in a shipping company's purchasing department. It was found that despite the fact that the purchasing staff were highly committed and hard working, the average time taken to process an order from start to finish was two and a half months at a rate of one order per hour. With requisition

forms, quotation letters, plus invoices, each order involved 17 pieces of paper. Transactions were recorded in four different books and processing an order could take as many as 35 action or decision steps. The cost of placing an order amounted to £10.

The department operated almost entirely on order-placing rather than a buying function. Little or no time was spent on such things as appraising the performance of a supplier, negotiating terms, or seeking alternative sources of supply. A new system was introduced which reduced the department's workload and paperwork by more than two thirds, with consequent savings of some £100,000 per annum.

From the line managers' point of view there have been three main gains: orders are now processed in a matter of days or even hours; staff are more likely to get the goods they need with a minimum of progress chasing; and they are more confident that they are buying goods at the best prices obtainable.

The well-intentioned manager who establishes a paperwork slimming programme frequently thinks in terms of a cost cut across the board of 20 per cent, or some such figure. If he does this, staff will concentrate on trying to make the existing system work better, rather than trying to find better ways of doing things. Inside 12 months he will be back where he started.

The crucial step in bringing

about real and lasting improvements in paperwork systems is first to determine why they exist and what they are supposed to do; then to establish that those objectives are valid; and finally, to determine from first principles the most effective method of achieving those objectives.

This is an exercise that some managers and members of staff may find painful. It involves challenging assumptions about things they have been doing for years. It may well find that some of the work they do is ineffective or serves no useful purpose. People do not take kindly to those who produce such revelations. This is just one of the reasons why active support of senior management is vital if the programme is to succeed.

Given that you have the ability to work in a systematic and disciplined manner and have a reasonable level of diagnostic skill and knowledge, it is not hard to find better ways of doing things. Many paperwork systems were never rationally designed, they just grew. The difficulty comes in persuading people to accept proposals for change.

Getting changes accepted requires careful planning, presentation and hard work. They are unlikely to be accepted simply because they are logical and reasonable. A rule of thumb which has been found useful is that if it takes four hours to establish information on a system, then it will take double that time to carry out an analysis and four times as long to get any proposed changes accepted.

Honesty works

There are several things that can be done to help people develop more positive attitudes to change.

Above all, be honest about what you are doing. As Robert Townsend puts it in his book *Up the Organisation*, "honesty really works." If the programme succeeds as you intend, then you will probably reduce the workload by 20 per cent or more. This means redeployment and possibly redundancies. Unless you have plans to deal with those problems you are unlikely to get co-operation. Try to show success early in

the programme by eliminating some of the more obvious cases of unnecessary paperwork; this helps to establish credibility.

Involve staff in the programme as much as possible. Get them to draw flow-diagrams of how the existing system operates, and ask for their ideas on how things might be improved. Some of the best suggestions come from people who are closest to the action. If you can reach the point where they are claiming all ideas and proposals as their own, the programme is going well.

Provide training, so that they are in a better position to contribute and understand what is happening. For example, run seminars and workshops on improving organisational and business effectiveness, on effective delegation, on methods of eliminating paperwork and on developing better systems of working.

In short, if paperwork is damaging the health of your organisation you will need to convince staff and management that a cure is necessary and that the results will not be worse than the disease.

The examples quoted in this article underline that a programme which is ostensibly concerned only with paper is a surprisingly inclusive and powerful tool for identifying unnecessary work and improving the overall effectiveness of an organisation.

Many organisations are now actively considering installing new computer systems. If they carried out a paperwork slimming programme and cleared up their manual systems before hand they would save themselves a lot of time, money and aggravation. Many would find they do not need a computer at all, or at least not a sophisticated one.

Whether or not a company has a paperwork problem is something each management must decide for itself. But it is important to point out the risks involved in the treatment. What would you do with your time if 50 per cent of your paper work was eliminated?

Dr. Lionel Wardle, an occupational psychologist, is a partner of Wardle and Wardle, a management and personnel services consultancy (37, University Road, Highfield, Southampton).

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THE ARTS

Edinburgh Festival

The Lighthouse

by ANDREW CLEMENTS

In December, 1900, a lighthouse supply ship on a routine tour of duty visited the Hebrides. It found the lighthouse deserted; the beds and table appeared to have been left hurriedly, and the lamp was out though in full working order. There was no trace of the three keepers. What became of them remains one of the mysteries of the sea, and the tale is the starting point for Peter Maxwell Davies's new chamber opera, which received its first four performances at the Moray House Gymnasium during the last week of the festival.

Davies has not attempted to resolve the riddle of the disappearance; merely, he says, to indicate "what might be possible under the tense circumstances of three men being marooned in a storm-bound lighthouse, long after they expected to be relieved."

The opera is divided into a prologue, which opens at the court of inquiry into the incident and relates in a series of flashbacks how the officers of the supply ship came upon the lighthouse, and a main act, in which the speculative but not the speculative last hours of the three keepers are chronicled.

The result is the most cogent and direct of Davies's dramatic scores. The forces are economical: three singers take the

parts of both officers and keepers; the familiar fires of London complement of seven is augmented by horn, trumpet and trombone, viola and double bass; the staging is intended to be simple, though not perhaps as primitive as the one we saw at Moray House. But the key to the success of *The Lighthouse* is in the composer's own libretto.

The text is elegant and to the point; its images are compelling. The main action inhabits a world of very recognisable fears and guilt, and suggests the stifling repression of Victorian Scotland, though the climax — the keepers driven to insanity by the reappearance of ghosts (or devils, or anti-Christians, call them what you will) from their respective pasts — is yet another exposition of a theme that has obsessed Davies throughout his composing life.

The prologue makes its points with the minimum of fuss. The three officers, interrogated by a sole horn placed in the auditorium, relate confused, contradictory stories: how they found no one at the lighthouse to meet them, how the lighthouse was overrun by rats, with chairs overturned, and food mouldering, how it was boarded up and the light made automatic. The main act can then present the three keepers, Arthur (bass), a religious fanatic always at odds with

Blazes (baritone), unworldly and amoral, Sandy (tenor) romantic,

less extreme, attempting to reconcile his colleagues. As centre-piece Davies establishes their backgrounds in a sequence of popular songs. Blazes, in a music-hall patter song accompanied by banjo, fiddles and bones, tells of a violent upbringing in a big city, ending with his murder of an old woman, a crime for which his father was hanged. Sandy sings of adolescent love in a Victorian ballad, with sentimental cello and out-of-tune piano. Arthur launches into a revivalist hymn with a band of clarinet, tambores and brass.

The seeds of self-destruction sown, the climax is swift and horrifying. The lighthouse is enclosed again by mists, hope of relief recedes. Disturbed by Arthur's mutterings, the three begin to hallucinate. Blazes is haunted by the ghost of the old woman he killed; Sandy by the realisation that his forgotten love affair was homosexual, forbidden. Arthur sees lights approaching — the Beast from whom God has failed to protect him. The lights move nearer, until they dazzle the audience: when they are extinguished the officers of the lighthouse are seen. They hint that they were attacked by the crazed keepers, but the truth must have surprised, the men will have just disappeared. The light becomes automatic and the ghosts of the keepers take their places.

The way that Davies builds

and controls this climax is enormously impressive. One has long hoped that he would find the synthesis between the dramatic directness of the music-theatre pieces and the sureness of line of his recent Orkney work; in *The Lighthouse* this is finally achieved. Many of the expressionist shock tactics are here, but subdued and more effective: the well-worn techniques of parody are worked upon the keepers' songs, turning into the material for catastrophe. There are imaginative subtleties too — the officers' account of their approach to the island, huddled, chilly music, the end of the prologue built upon the rhythm of the phrase "the lighthouse is now automatic," the lonely violin solos which permeate the main act, the eery recapitulation as the ghosts appear in the final bars. Davies has not attempted such a baroque, human theme before, nor fulfilled a dramatic plan with such complete success.

Performances — I heard the third night — were all devoted and heroic: from Neil Mackie, Michael Rippon and David Wilson-Johnson as the protagonists, and from the Firs of London, conducted by Richard Duffalo. The production was subsidised to the extent of £20,000 by Tennent Caledonian; rarely can commercial sponsorship of new music have been so richly rewarded. It must be staged, very soon, in London.

Final concerts by ANDREW CLEMENTS

It is becoming something of a tradition for the last morning of the Festival to contain a quartet, by the Amadeus Quartet. So, on Saturday, they appeared at the Queen's Hall for a programme of Haydn, Mozart and Beethoven. To anyone used to the fragile, nervous performances that the Amadeus give too often given in London in recent years, the event must have been reassuring. The impoverished acoustics of the Elizabeth Hall does not flatter them nowadays, but the warmth of the lovely Queen's Hall harnesses their sound, and with such encouragement the players could relax. Norbert Brainin in particular.

The success of their concert now hangs crucially on Mr. Brainin's state of mind. Here

he was composed, genial from the outset, turning the first movement of Haydn's Op. 74 no. 1 into a brilliant jeu d'esprit, finding a delicious staccato (spicato almost) for the heading rush of the finale. Mozart's D minor quartet was equally supple, the opening theme emerging, regrettably, almost lazily, out of a haze coloured by Peter Schidlof's viola, the sibilant rhythm of the finale, however, shaped. Traces of strain, some scrambled passage work, showed in the second Rasmovsky, but these were only fleeting blemishes; the impression of boundless generosity of spirit was sustained to the end.

Generous spirits, also for Saturday's final concert in the Usher Hall. The London

Symphony Orchestra, in its third concert at Edinburgh this year, was conducted by Claudio Abbado in Debussy's *Nocturnes* (the sirens of the last movement curiously chaste and unseductive) and Ravel's *La Valse* (an equally sanitised account, even the wonderfully vulgar trumpet smears at the final climax underplayed). The second half was an experiment. When plans were made for the festival to end with Beethoven's *Ten*, the state of the Usher Hall organ was found to be inadequate for the important solos. The organ at St. Mary's Cathedral, a mile away, was used instead; the sound was relayed to loudspeakers in the roof of the hall courtesy of the BBC, and contact maintained by closed-circuit television.

The enterprise, a few moments of stiffness in the opening exchanges aside, was entirely successful. I cannot claim to be an expert on the finer nuances of organ tone, but with eyes closed would not have known that Gillian Weir was not playing in the same hall as the orchestra. In any circumstances it is difficult to fail with this of all *De Dumes*. The LSO was alert and plenty loud enough: Philip Langridge took a little while to settle into the tenor solo at "Te ergo questuans" but found heroic tone to close. The Edinburgh Festival Chorus veered between imprecision and fine, weighty tone. A police escort brought Miss Weir to the hall for the final call; a good time was had by all.

Another yard of Fringe

by B. A. YOUNG

You can't see more than a tiny fraction, perhaps 1 or 2 per cent, of the fringe theatre when the official programme is so generous. I have learnt to take it for granted that most of the companies are there for their own pleasure as much as any other else's, so I choose my programme for my pleasure too, two or three fixtures a day for a week counting as pleasure for the nonce.

I look for new writers more than new performers. The student who believes that his Richard III will see him straight to the Royal Shakespeare Company must find a recommendation elsewhere; I will be searching out the new Stoppard, next year's Beckett, I haven't found him this year, the mood among the young writers is still so bleak that if these present their facet of our unstable society they will have contributed towards a better world. At the most notable — and, I think, James MacDonald's *Too Many Monkeys*, one of the National Student Theatre's offerings.

Here is a single-parent family consisting of a foolish woman who consistently declines any kind of official help although she is burdened with a son, Benji, born

without limbs as the effect of thalidomide, and a daughter, Mona, subject to epilepsy. The plot reveals Benji as a sharp little monster prepared to use his cunning brain to get what he wants at anyone else's expense, which at least isn't propaganda on one side or another. What Mr. MacDonald imagines he achieves by showing this household of three useless folk I don't know, as he admits, it's not a story about thalidomide, just a story in which a character happens to have been handicapped. If there were a Thalidomide Lib, they would approve of it. Jane Prowse is the director.

At the other extreme is Edward Wiley's *Alternatives*, a game of sexual draughts between six players, with two more introduced to elicit more conversation, like the confidants of classic drama. Joanna has a boy-friend, Paul, but picks up another, Ken. Ken is innocent relationship with Alex. They sometimes go to the pub with Mark, Bill and Derek, who work on the same newspaper as Ken. Joanna has an evening out with Derek who is married to Louise, whom we never meet. Bill and Mark have no affairs at all,

though I suspected at one moment that Mark was going to make a grab at Derek. When Louise left him, Mr. Wiley's dialogue is of diagrammatic simplicity, and though Joanna kills herself when Ken has made her pregnant and the tensions are too much for her, there is little passion in the playing of the Omphalos Street Company.

Steven Morris's two one-act pieces, put on at Belford Church by a good little company from the University of California, Los Angeles, can be described as the same only different. It's family tensions again, but at least the families don't come from the British middle-class. The eponymous *Martha* in *Confessions of Martha* is bored with her husband, who is bored with her, but the way she shows it in her 40-minute soliloquy (ably spoken by Lucinda Burgess to an audience of five) is to invest a milkman's dead and decaying on the doorstep. I found this as funny as it was chilling. *Sketches*, the other play, is defined by its title. Once more, its content is domestic: a retarded girl releases her father's cattle, they graze on a neighbour's precious garden and die from weedkiller. The story is told in an unorthodox way as a series of soliloquies. This lets the company display their individual talents, but denies us the chance of seeing if Mr. Morris can write a good developing scene, which is what I mostly wanted to see.

There are half-a-dozen companies from California on the fringe, though not our old friends from the University of Southern California. Altogether there are 14 fringe companies from the U.S., three from Canada, two from Australia, several from France, Belgium, Holland, and a German girl running a smashing little snack-bar

called the Berlin Cafe where you can get Kaffee mit Schokolade.

The Cambridge Mummies, whose production of *The Roaring Girl* was reviewed here earlier by Michael Coveney, offer a very black comedy, Latin, or Tobacco and Boys, by Stephen Fry, who is also half the cast. Tobacco and boys are what Marlowe said we should all go for; but only one of the two pre-school masters in Mr. Fry's play loves boys, and neither of them smokes. What the other master likes is being beaten, and he persuades the pedantic one to do this for him as his price for not telling the authorities about the scandal he has discovered. Neither of these two ushers is fit for the staff of any school, but Llanabba Castle, but the fact is that when we see them teaching they do it very well, which raises an interesting point that Mr. Fry doesn't pursue. Improper play may be, but it is excellently written and excellently played.

Real small boys can be seen in the Children's Music Theatre, and small girls too. This is Jeremy James Taylor's bunch of interesting and intelligent, conceived series of events. Last year the festival's theme was the character of Hamlet, seen in various guises and contexts ranging from Shakespeare to Chalkovski, from Gasparini's early 18th-century opera *Ambro* to the modern songs of Mario Castelnuovo-Tedesco. A round-table discussion assembled musicologists from England and Italy, as well as literary critics and a clinical psychiatrist.

The theme of the third festival was *Romeo and Juliet*; and again Marlia's rich programme, though concentrated in less than a fortnight, included dance, theatre (Lope de Vega's *Castro y Montes*), poetry readings, scholarly discussion, concerts, and films. As in the past, the heart of the festival remained the splendid Villa Reale of Marlia, with its magnificent outdoor settings, including a "green theatre" of privet, but several festival events were also scheduled in Lucca. And it was there that the festival ended, with two staged performances of Bellini's *I Capuleti e i Montecchi*.

Rows of seats and a series of platforms, serving as stage, were set up in Ammannati's Cortile degli svizzeri, so the action of the drama was played against the 14th-century apse of San Romano. For the rest, Aldo Trionfo's staging was generally simple. He made the mistake of fixing a vast, rumbled bed in the central, lowest platform. *Romeo and Juliet* were



Sue Davies, the director, in the new headquarters of the Photographers' Gallery

Travis Humphries

The Photographers' Gallery

A Coming of Age

by WILLIAM PACKER

It is hard today to remember, so obviously important is the position it now occupies in our photography-cum-art world, quite how radical and risky a venture the Photographers' Gallery seemed to be at its inception, all of those nine years ago. But it was the first independent gallery in London to devote itself exclusively to photography, and it did so at a time when the photograph's standing as art was a question very far from resolution. In January 1971 the more general economic portents, too, were hardly propitious—and we know too well what has happened to our dear economy since then.

Sometimes, however, difficulties do go away, or at least diminish themselves, if disregarded: the Photographers' Gallery, under the direction of the admirable Sue Davies, flourished from the start, demonstrating at once by the invaluable service it provided the necessity for its existence. Moreover, it blithely assumed the intrinsic worth of the material it showed, justified in a sequence of historical and contemporary shows, and thus not so much won as brushed aside the argument of status. If the photographer may be an artist, his work may be art: and so we were moved briskly on to the work itself, on its own terms and for its own sake.

The Gallery was always intended to be much more than simply a showing space, and indeed as book shop, print shop, library, and information exchange it has long been a true centre for the community of photographers, the envy of those working in all other disciplines; and though it may have its quiet days, I have never known it to be empty. And the pressures of such useful success have worked upon it to the point when it must either expand or explode.

The necessary expansion is what we celebrate today. The old premises at 5, Great Newport Street remain, housing the now enlarged but larger bookshop to the front, and still the large gallery behind; but where three, sometimes even four shows had somehow been crammed together, now but one, or perhaps two need be accommodated and in great comfort. And three

doors away Sir Joshua Reynolds' old house, a building listed as much for the sake of its pre-war remodelling as for what remains of the original, has been taken over and handsomely adapted as the new headquarters. Offices, workshops, print and reference libraries, and a department for the sale of photographic prints are all in the house itself, with the corridor alongside set up as a smaller showing space, and at the back a former workshop has been opened up to make another major gallery, one which can readily serve as a lecture hall. Altogether the space available for exhibitions, to say nothing of other things (there is also a bar), has effectively been doubled.

All this has cost a great deal of money, of course: the good news is that the gallery has managed already to raise some £240,000 towards the capital cost of the lease and the conversion, while the Arts Council has doubled its revenue grant, which covers the practical costs of running the place, a sum which now stands at £30,000. The bad news is that £50,000 is still needed—but optimism rides high, and indeed it is hard to believe that an organisation that attracts rather more than a 0.25m visitors a year should stumble at the last over the price of an ageing footballer.

And so it is that the new building opens its doors to private view today, and to the public tomorrow, with the international prize exhibition, "World Press Photo" (come to England for the very first time), occupying the main, which is to say the Tom Hopkinson Gallery. The Press photographer's is an exacting calling, requiring sound technique, the quickest reflexes and a good eye, all of them founded on a quick wit and common sense. It is a visual trade in which immediacy and topicality, the virtues of being there rather than here, often over-ride more formal considerations, a great shot apparently all content and no form at all. It is not that it has no aesthetic, however, but rather one of a very particular kind, for the true Press photographer will make instinctively the judicious compromises and accommodations that mark him as an artist, while still serving the moment and the material of his story. And some of the most remarkable, and memorable images of all have been

thus achieved. This collection falls naturally into categories that together cover all manner of people, places, things and circumstances. We confront stark horror and tragedy, and then again great happiness and delight; war, accident, disaster, public faces, private attitude and incident, and always sport, the modern obsession. And repeatedly the photographer, with his independent and opportunistic eye, moves into the space between ambition and pretension, and a real, recognisable humanity. The prize-winning picture, by David Burnett of New York, is a study of a Cambodian refugee with her child, an image of profound simplicity.

The new Portfolio Gallery carries an essay on village life in North Devon by James Ravilious, which is being published co-incidentally, with a text by his wife Robin, by the Scolar Press. He looks out upon a community, and the countryside that has formed it, with a quiet and loving understanding, celebrating the enviable certainty and normality of the country routine and the turn of the year, its covert dramas and modest triumphs.

Meanwhile, the old gallery, now named after Bill Brandt, holds an extraordinary,

labyrinthine installation contrived by Andrew Lanyon, which leads the increasingly captivated viewer through a gentle spoof history of early photography, full of excellent jokes and charming working models and displays.

In his *Vanishing Cabinet*, Lanyon takes Lewis Carroll as his guide, picking up the clues that were put into Alice's mouth, and following her trail into what Carroll evidently found that enchanting wonderland of gadgets and chemicals, tricks, illusions and contradictions, what with its negatives and reversals, its vanishing, enlargings, the photographer himself disappearing behind his machine, or into his mysterious laboratory. Lanyon's delicate surrealist touch never lets him down with material that could so easily turn into archness, sentimentality and facetiousness. His collages and other illustrations are delightful; and "the step pyramid at Sakkarra, showing bellows structure built more than 5,000 years ago" gives us all much to ponder.

The *Vanishing Cabinet* continues until September 28, World Press Photo (with help from the Sunday Times) and The Heart of the Country until October 5.

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'A Night at the Opera'

George Bernard Shaw wrote a letter to The Times in 1905 complaining about the lax rules applied to the dress of women opera-goers. The incident which particularly rankled was his feeling of nausea at the sight of a dead bird attached to a lady's hat.

What would his reaction be now, when philistines are encouraged to rub shoulders with regular opera buffs? This rable does not go in happy expectation of the perfect execution of virtuoso singing. The highlight of their evening will be in opera buffoonery. Barry Hewlett-Davies has added

new dimension to what was a noble art form—that of the unexpected and often disastrous. *A Night at the Opera* (Weidenfeld) and Nicolson, £4.50, 160 pages) consists of an hilarious collection of vignettes, reminiscences and contributions from celebrated singers, conductors, composers, actors and writers on their experiences at the opera. The more elevated scene the more exasperating their downfall. The author has given us some rare glimpses before and behind the scenes. Royalties will go to the English National Opera, and Sadler's Wells Beethoven Fund.

KATE MORRISON

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A setback for the NPT

WHEN THE nuclear weapon states embarked upon the second review conference of the Non-Proliferation Treaty last month, they hoped to be able to strengthen international safeguards against the possibility of more nations acquiring nuclear weapons. With the peaceful use of nuclear power poised for considerable expansion in the 1980s, especially in the Third World, the U.S., USSR and Britain recognised a need for tighter safeguards against any temptation to divert nuclear materials and skills from reactors to weapons.

Restrictions

The nuclear weapon states emerged from the review conference at the weekend having apparently lost considerable ground. They have wholly failed to persuade the Third World to accept the restrictions and cost inevitably associated with an effective safeguard against proliferation. None of the 115 signatories to the NPT has elected to drop out, but may have made it plain that they can see more drawbacks than benefits for themselves.

The outcome must surely persuade the weapon states that there is no way to advance what is essentially a moral case for supporting the NPT. Threats have been uttered for 35 years, since the post-Hiroshima schemes put forward by the U.S. for international control of atomic energy and, as the phrase was then, "condign punishment of States which stepped out of line. They have not prevented five other nations from exploding nuclear devices, and several more with well developed technologies from resolutely remaining outside the treaty.

Frustration with India, which had pursued a nuclear weapons development programme to the point of an explosion in 1974, led the U.S. and Canada to adopt a rigid "policy of denial." The effect of this policy has been to damage the delicate fabric of the NPT. It has led directly to the debate of the review conference. At the same time President Jimmy Carter himself, as chief proponent of the "policy of denial," has underscored its weakness as a policy by declaring his willingness to supply India with nuclear fuel even though it still refuses to sign the NPT.

The Geneva conference has shown that the Third World, on the 10th anniversary of the NPT, can mount a strong moral case. They can point to the way weapon states have flouted the undertaking under Article Six of the treaty to reduce weapon testing. They can point to the way that nuclear armories, far from diminishing, have increased enormously during the 1970s. They can point to the indisputable fact that some countries which have not signed the NPT have won better deals for the supply of nuclear technology and fuel than those which accepted its terms. They can ask, with some justice, what benefits they receive from allowing international inspectors access to their nuclear facilities.

The nuclear weapons states must begin urgently to repair the damaged fabric of the NPT. Whatever its limitations, it has been a remarkable achievement to get 115 signatories to one international treaty, and there can be no thought of phroning what has been achieved. But if the weapon states seriously wish to control the spread of nuclear weapons to more countries, they can hope to do this only by demonstrating a readiness to assist non-weapon states to get maximum benefit from civil nuclear power.

The onus is upon the weapon states to produce proposals persuading enough to keep existing signatories within the treaty, and to persuade others—especially the dozen "near-nuclear" nations—that the balance of advantage has tilted towards their signing the NPT. The extra cost—and there is bound to be one, as a senior Energy Department official pointed out to the Uranium Institute's conference in London last week—will probably have to be carried by the nuclear weapons states. The international guarantees against a future unilateral "policy of denial" by any nuclear exporting nation will have to be absolutely watertight.

It will not be easy, not least because the crisis for the NPT has occurred at a time of deteriorating relations between the U.S. and the USSR. But one thing the U.S. and Britain can be sure of is that the Russians will be just as eager to maintain and extend the NPT as the weapon states of the west.

Danger signals in Korea

POLITICAL repression in South Korea give, legitimate cause for anxiety. The west has a strong interest in a stable and responsible regime holding power in Seoul. Thirty years ago a bitter war was fought under U.S. leadership to prevent the country being swamped by the Communist-ruled northern section of the Korean peninsula. Much has changed since then. But the North has not buried its ambitions and geography has not altered: less than 200 miles separate Korea from the Japanese islands.

But for western support during and since the Korean war there would be no South Korean state. Over and above that, the outside world has funded a large part of South Korea's ascent into the ranks of the coming industrial powers. South Korean foreign debt exceeds \$20bn.

President Carter last week sent a message to the newly installed South Korean President and dictator, Chun Doo Hwan, expressing concern about the repression sweeping the country. The Press always has been controlled, yet the military regime has found it necessary to suppress more than 100 "perfidious" early last month 16,500 "hooligans, drug pushers, extortioners, and habitual gamblers" were arrested. The nomenclature has a depressing ring, familiar from other dictatorships.

Western aid

Best known of all, Kim Dae Jong has been put on trial for his life on charges that appear highly questionable. Kim received 45 per cent of the votes when losing the presidential elections of 1971 to General Park Chung Hee. He went to Japan but was kidnapped and taken home by agents of the Park regime, to the lasting anger of the Japanese. More than once his life has hung by a thread. Kim is a threat to the regime, because he could serve as a crystallising point for opposition.

Current events were set in train last October when President Park was assassinated by one of his officers. Power temporarily reverted to a group of older generals who appear to have been ready for a degree of liberalisation as demanded by intellectuals and students (though the majority of the

population still seems ready to suffer authority with Confucian stolidity). Expectations were promptly raised.

In May, an uprising in Kwangju, capital of Cholla province which tends to resent Seoul supremacy, was fiercely put down. So were student riots in Seoul. General Chun may have used these riots as an opportunity to set himself up as the man who restored stability and order.

The last year has demonstrated that authority in South Korea may be more brittle than appears. The country is undergoing those pressures for liberalisation that grow in most societies as they enter the industrial age. An economic setback has aggravated them. In its very different way, Brazil faces a similar problem.

Moral pressure

President Chun has offered at least lip service to the need for a modicum of reform. His proposed constitution has not been published. But the Press has suggested that the people themselves might be allowed to choose the electoral college for the presidential elections promised by mid-1981. Under the Park regime the college was packed by the Government and even now there is little doubt that the ruling clique will see to it that President Chun is duly re-elected for a seven-year term.

The pressures that the outside world can bring to bear on President Chun are limited. There are 39,000 U.S. troops in the country, but any threat to withdraw them would almost certainly be empty. Washington talked of the possibility a few years ago, but strategic reasoning prevailed. Experience shows that moral pressure from abroad counts for little in Seoul. Financial pressure would pose its own problems.

The fact of the matter is that democracy cannot be imposed from the outside. Nor can the West automatically assume in its dealings with the Third World that European or North American style democracy is the acme of political perfection. But even in Korea the late Dean Inge's dictum holds good — "a man may build himself a throne of bayonets, but he cannot sit on it."

Guy de Jonquieres looks at the long-term strategy of the Japanese computer industry

Microchips: Japan expands its bridgehead in Europe

JAPAN'S MAIN COMPUTER AND ELECTRONICS COMPANIES

FUJITSU

Japan's largest computer maker with revenues of \$1.2bn in the year to March 1979. Fujitsu recently set up a joint venture with TRW Inc. of Ohio, to compete in the U.S. market for small and medium-sized computers. Fujitsu has already formed links with a number of

HITACHI

Hitachi, Japan's largest general electrical machinery maker, last month reported an 18 per cent rise in orders, largely due to increased demand for computers and semiconductors. Hitachi, which agreed to exchange

NEC

Nippon Electric (NEC), the tenth largest supplier of integrated circuits to Western Europe, may build a \$20m microchip plant in Scotland. It already has a West German assembly plant and plans to shift more of its

TOSHIBA

Toshiba — whose largest single shareholder is General Electric of the U.S. — plans to begin production of semiconductors in the U.S. by the end of the year. Two years ago it

MITSUBISHI

Mitsubishi, Japan's largest trading company, set up Melcom Business Systems, a U.S. subsidiary, in Compton, California, two years ago. Melcom imports small-business computers not hot to assemble them in the future. Sales of Mitsubishi Electric rose 17 per cent in the

well as backing research efforts by French companies, the Government is seeking to encourage joint ventures between French companies and U.S. semiconductor manufacturers. The French put up the cash and retain control of the joint ventures, while the Americans are asked to contribute the technology.

But as dominant suppliers, the Americans know they stand to lose most from tougher international competition. The Japanese have already staged a dazzlingly successful raid on the U.S. industry's home territory. After entering the American market less than two years ago, they have seized roughly a third of sales of 16-K Random Access Memories (RAMs), the most advanced standard memory chips in mass production which are widely used in microcomputers.

Their success has been due to a combination of excellent technology, careful planning and shrewd marketing. Timing helped too: their arrival coincided with an unexpected boom in world demand for 16-K RAMs last year while American manufacturers could not satisfy because they had cut investment in new capacity after a collapse in the market in the mid-1970s.

Japanese manufacturers who are now starting to manufacture in the U.S. have also skillfully cultivated a certain mystique about the high quality of their chips. Their claims have been borne out by Hewlett Packard, a major American user, which has said that the chips it gets from Japan contain fewer defects than those from U.S. suppliers.

"Poppycock," retorts Mr. Charles Spork, president of

National Semiconductor, a leading U.S. chipmaker. "It's just that the Japanese test their devices more thoroughly before they leave the factory and reject the faulty ones." They can afford to do this, he says, because Japan's financial system does not require them to meet the standards of profitability which U.S. companies must maintain to continue to attract investors.

Ironically, Japan's emergence as a significant chip supplier was much to fear in the early 1970s that its infant computer industry would be overwhelmed by American giants: even today, American companies sell more semiconductors to Japan than the Japanese sell in the U.S., though the gap is narrowing fast.

The Japanese Government launched in the mid-1970s a characteristically detailed programme to meet the American challenge. Working closely with the leading computer manufacturers, it ploughed about \$550m over four years into a project to develop the Very Large Scale Integration (VLSI) technology used in the most advanced chips.

By some accounts, the methods used to acquire the basic technology were not over-enthusiastic. Silicon Valley in California, where much of the U.S. industry is based, abounded with stories a few years ago of Japanese companies paying American chip designers handsomely to pass on the secrets of the business out of working hours.

The Japanese need resort to no such ruses today. They are acknowledged by their U.S. competitors to be equal in many areas of semiconductor technology and may in some cases

even be ahead. Earlier this year they demonstrated a 256-K RAM, which can store 16 times more data than a 16-K memory, and are well advanced in the development of bubble memories, which may displace silicon chips in some future applications.

The growth of Japan's semiconductor industry is, however, only one element of a broader strategy. Its objective clearly appears to be to acquire a leading position in the huge new market that is expected to result from the progressive convergence of communications and computer technology.

The first and most dramatic impact of this process is likely to be felt in the office, as clever electronic systems take over many functions now performed manually or mechanically. Competition among suppliers is already becoming intense, with giant corporations such as International Business Machines (IBM), American Telephone and Telegraph (AT & T), Xerox and Exxon all preparing to do battle.

But even these corporate Titans are starting to glance nervously over their shoulders in the direction of Japan. Japan has five big data-processing manufacturers, as well as several hundred smaller concerns. Fujitsu, Hitachi, Mitsubishi Electric, NEC and Toshiba together boast ranges of computers and business equipment that are broadly parallel with IBM's own. All five are also vertically integrated, controlling their business from chip design and manufacturing to the assembly and marketing of finished products.

The performance of the five has been sharpened by fierce competition on the domestic

market. As a result Japan, the world's second biggest computer market after the U.S., is the only country in the world where less than half the computers designed are of American origin. Admittedly, the industry's development was aided by the maintenance of trade barriers for many years.

As the same market starts to approach saturation, Japanese companies are looking increasingly to foreign markets to maintain expansion. Their exports of data processing equipment this year are forecast at about \$400m and are expected soon to overtake imports for the first time.

According to one recent forecast, Japan's total production of data-processing equipment will double to \$50m annually by 1985, while exports will increase fivefold to \$20m, of which about 60 per cent will be shipped to the U.S.

There is plenty of evidence that the Japanese have already identified IBM as a prime target. With more than half the world's installed large computers, the company's customer base is the envy of its competitors. But IBM is fairly immune to poaching by other big U.S. manufacturers because their machines operate on different programmes. A customer, who switches from one, make to another must rewrite all his programmes, a lengthy and immensely expensive task.

Japanese manufacturers have adopted another approach. They are making computers which closely resemble IBM machines, but offer higher performance at lower cost. Such machines are known as "plug compatible" because they can be plugged straight into an IBM system.

Fujitsu and Hitachi have both taken U.S. partners. The former owns 25 per cent of Amdahl, the first plug-compatible manufacturer, founded in the early 1970s by a former IBM engineer. Fujitsu helped finance the company in exchange for access to its technology. Hitachi supplies computers to National Advanced Systems, part of National Semiconductor.

Japan's share of the U.S. large computer market, though still probably less than 5 per cent, is growing rapidly. It has clearly had a marked influence on the marketing and product strategy of IBM, and hence of other big U.S. computer manufacturers as well.

In Europe, Fujitsu has signed up Siemens, the big West German electronics and electrical group, to sell a range of Japanese computers, while Olivetti, the Italian business equipment company, is marketing Hitachi machines.

The Japanese are also active in marketing computer peripherals equipment, such as terminals and data storage devices. Dr. Peter Walker of Macintosh Consultants, which analyses the electronics industry, foresees a major battle looming between Japan and the U.S., which supplies about 80 per cent of European computer peripherals. "I am very concerned at the threat to European manufacturers unless urgent action is taken," he says.

The range of products covered by the term peripherals is growing constantly wider, as technology makes it possible to hook equipment like office copiers, facsimile machines and word processors into computer systems. Japan is a strong competitor in these markets, too, and has jolted Xerox by its success in selling copiers.

The only major weakness of the Japanese industry is software, the programmes which tell computers what to do. Demand for software is growing rapidly, as more and more applications are found for computers, particularly in communications systems. Some in the industry believe that in 10 years' time software could account for as much as 80 per cent of the total cost of a sophisticated computer system.

To remedy this shortcoming, the Japanese Government recently launched a new joint programme with the industry: one of its objectives is to facilitate the processing of Japanese language, a daunting task in view of the thousands of characters in the alphabet. The Government is also trying to encourage the development of an independent software industry.

It is a measure of Japanese confidence, though, that officials in the Ministry of Trade and Industry which has guided much of the development of the computer industry, talk of the problem of software in terms of when it will be solved, not of whether it can be.

MEN AND MATTERS

Pirate hunter prepares for sea

A new combatant has entered the battle to keep the small screen safe for legitimate film distributors. Sailing against the video pirates who control a booming international trade in illegally-copied films and television programmes comes the Video Copyright Protection Society, to be headed by former BBC executive Peter Lord. The VCPs has been formed by the Society of Film Distributors, the Independent Television Companies' Association, and BBC Enterprises, the corporation's sales arm when Lord will retire as sales director to join VCPs on October 1.

Video piracy has boomed with growing sales of video cassette recorders. A single "ring" netted by police in Europe last year was dealing in £30m of cassettes annually.

VCPs will enjoy a modest start in life, with "me, a secretary, and an answerphone," Lord tells me. The scope of its

activities has not yet been finalised, but it is likely that other film makers who would like VCPs to police their products will be invited to join. The society will not itself initiate prosecutions, but will do the groundwork necessary to enable prosecutions by the affected company.

The main video black market is in feature films, where pirated cassettes of newly-released products can apparently be had in London for £100 or less.

Repelling borders

It is fitting, I suppose, that the World Council of Churches, which deals in one of the oldest commodities known to man, should retain a strong sense of independent tradition. It brooks no nonsense from the synthesisers and dumpers. Nor is it prepared to allow HMC to mock about with its time-honoured internal political system.

With regional elections coming up in November, the board has sent out a sharp little note reminding all concerned that the Shires are still the Shires. "For the purposes of the elections," it sternly states, "the geographical countries remain the same as they were before the coming into force of the Local Government Act, 1972... and nominations for the new administrative counties or regions will not be accepted."

Holy owned

It was with more than a little surprise, as I perused the details of the generous agreed takeover by amusement machines group Hawley Leisure of the Progressive Securities Investment Trust, that I discovered prominently displayed in the list of lucky Progressive shareholders the unfamiliar name of Roman Catholic Purposes Registered, holding a cool 22.37 per cent.

RCPR, it transpires, is the investment arm of the Society

of Jesus. Anxious to flog out more about the size and distribution of the Jesuits' assets, I contacted the Society's Mount Street headquarters. A civilised lunch elicited information about the social, educational and pastoral work of the English Province both in the UK and through missions in Zimbabwe and Guyana. As regards the size of the funds, however, I was met with an example of what their treasurer freely admits is the Jesuits' "deep-seated tradition of privacy and reserve."

Unlike the Church of England, which is an official state religion, the Jesuits, he explained, are a private body accountable not even to the Roman Catholic faithful. "Things are changing however," he conceded, "and the day will come when we will be much more open. For the moment, suffice it to say that property and money are not part of a power game. We are by no means rich if you take into account the worldwide work which we support."

Standing down

In the traditionally discreet style one associates with the ordered displays of Gentlemen's Tailors and rows of sensible shoes, Fortnum and Mason has shed three worker-directors from its board.

But this is no coup, nor a blood-letting, says managing director David Jaggs. Douglas Hanney, Wallace Kean and Lilliana Prescott, who have vacated their seats the better to tend their daily duties in charge of the provisions, exports and fashion departments. They will not, he adds, be replaced on the board.

Since profits dipped so dramatically last year, chairman Garry Weston of the parent, Associated British Foods, has been taking a special interest in his showpiece shop. Slimming down the

direction, says Jaggs, is intended to bring Fortnum's management structure more into line with that at ABF, and also to prime the company for growth.

"We happen to believe," he tells me, "that once we are clear of current problems the smaller speciality store of our size can go into expansion—what you have seen here are the first steps of planning for the future."

Falling out

The Turkish army greatly fancies itself as a haven of stolidity and calm from which will spring the defenders of the State should the endless feuds among its politicians run out of control. But two of its leading commanders, retired and now in the Parliament, are noisily demonstrating that the military is far from immune from certain politicians' diseases.

A fortnight ago General Ali Elverdi, possibly trying to settle a few old scores, spoke scornfully of "rotten eggs" among the martial law commanders now running 20 of the country's 67 provinces. General Semih Sancar promptly fired bayonets and charged. If Elverdi had been one of his students at war school, he said, he would never have passed him.

Now Elverdi has come bouncing back with the yab-yoo information that he was indeed Sancar's student for two years and offering to the house the intelligence that his former mentor—the man who led Turkey's invasion into Cyprus—is now "senile" and a "meat head."

While I wait a comparably fruity riposte from Sancar, the nation is still wondering when its members of Parliament will stop slanging one another for long enough to elect a President—a task they have been fiddling with for the past six months.

Observer

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It pays to deposit with UDT

David Fishlock considers issues raised by the high cost of new surgical techniques

A modern medical dilemma

WHEN DOES research on patients become a successful and economically justifiable new technique of medicine? The question is an old one which was given poignancy last week by a fresh furore over heart transplants at the annual meeting of the British Association for the Advancement of Science in Salford.

Following two more deaths in the film research programme of heart transplantation begun a year ago by two British heart centres — Papworth Hospital, Cambridge, and Harefield Hospital, Bucks — the expense and justification was challenged by the director of the Unit for Study of Health Policy at Guy's Hospital, London, Dr. Peter Draper.

Heart transplants will probably never solve more than a small proportion of heart disease problems. The seat of the trouble usually lies outside the heart itself and the transplanted heart usually succumbs to the same trouble. Dr. Draper, a long-standing critic of the medical establishment, believes that Britain is lagging behind such countries as the U.S. and Finland in preventing the onset of much heart disease. He wants to see more Government resources channelled into preventive medicine, rather than into heroic surgery on the very sick.

Transplants are not merely inappropriate for most cases of heart disease, at present, they are so stressful, mentally as well as physically, as to seem unsuitable for anyone over 60. So the health service needs to take care that a disproportionate share of operating theatre resources is not channelled into helping the few at the expense of the many.

Ministers and senior officials of the Department of Health are acutely aware of the financial

THE COSTS OF A HEALTH SERVICE

HEART TRANSPLANT

(1978 figures)

Pre-operative assessment	£ 3,087
Operation + 27 hospital days	3,177
Staff: medical	983
nursing	3,241
ancillary	1,089
Pathology	170
Radiology	442
One-year outpatient follow-up	375
	£12,564
SPECIAL COSTS	
Additional hospital stay	2,520
Donor operation	551
Immuno-suppressive drugs	1,043
Cardiac biopsy	600
Total	£17,278

Source: *Medicconomics*, May, 1980.

risks of experimental medicine. But they admit they are "just emerging from the Stone Age" in terms of being able to manage medical costs.

Some well-established surgical procedures such as the removal of a lung for cancer have never been shown conclusively to prolong the patient's life. Few attempts have been made to cost accurately the price of curing the patient. About the best they can do much of the time is to try to spot the anomalies — for example, when a surgeon is trying something new and incurs expenses out of line with his previous performance. And not just surgeons — they were rocked recently when blood disease doctors ran up a bill of £80,000 for a novel medical treatment for two patients with haemophilia.

The Office of Health Economics, think tank of the pharmaceutical industry, pointed out recently that success in treating the cancer which causes leukaemia, by bone marrow transplants, threatens to become a financial embarrassment to the

Health Service. It estimates the cost of a bone marrow transplant at £5,000-£8,000. In addition the patient requires preparatory treatment costing another £5,000-£10,000 before he is ready for the operation. Currently British hospitals are treating about 50 a year, but the economists estimate demand at 300-500 a year.

The "test-tube baby" technique for extra-corporeal conception by infertile women threatens to be still more embarrassing for no life is at risk here. The technique, after 15 years' research by Dr. P. C. Steptoe and Dr. R. G. Edwards and only one or two successes, is still highly speculative. But with the researchers claiming a waiting list of 1,000 women for the pair of operations involved, the Department of Health has no doubt of the determination of infertile women to rectify their problem if the opportunity should ever arise.

Nevertheless, the men from the ministry say they want decisions on the allocation of resources for acute problems to

remain at local level. "They have great confidence in 'peer criticism' within the medical profession to ensure that individuals do not make unwarranted demands on their cash. They point to the way surgeons with specialities ranging from life-saving kidney transplants at £30,000-£40,000 a time to cosmetic implants of silicone resin which enhance the contours of the female breast ask their colleagues: 'Am I doing too many at public expense?' They have faith, they say, in professional pressure preventing consultants aspiring to be 'hero of the day'."

Sir Douglas Black, the former chief scientific adviser at the Department of Health, staunchly defended the two transplant research teams. Heart transplants were at the stage reached by kidney transplants three decades ago.

Sir Douglas himself speaks with considerable feeling, as the man who had to implement what is known in the trade as Rothschild's "customer-contractor relationship" for the funding of medical research. Lord Rothschild, as first head of the Central Policy Review Staff (Think Tank) in 1970, took a look at the correlation between British medical research objectives and hospital bed occupancy. He found none whatsoever.

Bigger say

His idea — that the Department of Health as the "customer," should have a much bigger say in how the medical scientists spent public money — was vehemently challenged by the researchers. They lost at the time. But an independent review in the late 1970s suggested that they won in the end. The best of them continued to pursue the kind of medical research that excites and motivates them, rather than research commissioned "in the

public interest."

"The Rothschild principle has been tested and found wanting," concluded the British Medical Journal. All attempts to identify practical priorities for research had failed. Not least of the consequences is that the Department of Health is very wary today of trying to dictate what medical researchers should be doing: of designating either priorities or areas which they should avoid. The political pitfalls for the Health Minister hardly bear thinking about. "And we'd probably get it wrong too," says a senior official sagely.

The closest the department ever came to declaring a major area of research off-bounds was heart transplants. In 1967 Dr. Christian Barnard, the South African surgeon, performed the world's first heart transplant in Cape Town. He had learned the technique from Professor Norman Shumway, a Californian heart specialist who had spent nearly a decade perfecting on dogs an operation involving nine reconstructions of major blood vessels.

Popular interest proved immense. Perhaps because poets have invested the heart with attributes other than merely being a 300-gram blood pumped with an output of about 14,000 litres a day, people seemed genuinely astounded at the idea that surgeons might transplant a living heart. Dr. Barnard became an international hero. Other heart surgeons worldwide hastily assembled teams to prove that their heart surgery was abreast of the world's leaders. An epidemic of heart transplantation followed.

It proved to be an expensive failure. The complex technology of heart transplantation was not yet ready for transfer to another country, and certainly not ready to be transferred by a surgeon who had spent only a few months at the

'Why heart surgery must not stop'

HEART transplants were delayed yesterday by the death of the Royal College physician

'THIS HEART SWOP MANIA'

Prevention is best, says transplant row doctor

Heart swap patient rushed to hospital

Mr. Andrew... and...

Heart boy dies, but swaps go on

The right to a longer life...

feet of the master craftsmen. Worldwide, the recipients of new hearts mostly soon died.

Within a matter of months British surgeons, research administration and Health Department officials came to what officials call a "gentleman's agreement" that heart transplants should stop until the Shumway technique was understood better. Other U.S. heart teams came to the same decision. The epidemic of heart transplants was over for a few years.

With infinite patience Professor Shumway continued during the 1970s to perfect his technique. He has now performed more than 150 heart transplants on people. His latest figures show that 63 per cent of his patients survive for a year, and 54 per cent for four years.

Last year Britain's heart specialists decided that it was time to try again. But this time, instead of the unseemly scramble for headlines of the late 1960s, they agreed to an orderly programme based on two surgical centres. They planned to perform a couple of dozen transplants apiece, then review the results of this experimental surgery. Out of about a score of operations one patient has survived a full year. Three have died. Their performance will have to improve quite a lot in the next year to approach the Shumway success rate.

The public still seems to find it astonishing that the heart can be exchanged. It shows far less interest in transplantation of organs with a much more complex function, such as the kidney—a thousand transplants a year in Britain—or the liver.

Watchful eye

The Department of Health is keeping a watchful eye on the costs. The operation demands a lot of skilled resources, not only at the operating table but to tailor and maintain a satisfactory regime of immuno-suppression—preventing rejection of the organ as a "foreign body"—for the recipient.

The accompanying table has been compiled by Dr. John Hampton, a heart specialist at Nottingham University Hospital, using Department of Health figures. It arrives at an estimate of over £17,000 for each operation (1978 costs). On this basis the current UK transplant programme could cost close on £1m — which compares with a total Medical Research Council budget of about £72m this year. The breakdown makes it plain just how expensive are the drugs, tissue tests, and the post-operative monitoring of the patient.

Even so, Dr. Hampton admits that his figures cannot reflect the full cost at this stage. "So long as a medical technique is

new and exciting, doctors, nurses and technicians will happily work very unusual hours to get something done." The enthusiastic heart surgeon himself will fly round collecting hearts—which, unlike kidneys, must be transplanted fresh—and work all night at the operation while continuing during the daytime with his routine list.

Dr. Hampton contrasts the current cost of grafting a £500 heart valve of plastic into a living heart. "Technically a heart transplant is not very much more difficult than a valve replacement, and the theatre time is comparable." According to estimates made by the London Hospital in 1978, it works out at £2,536. Some costs added in for transplants have been omitted, but big savings are made in nursing and in special drugs and tests to try to prevent rejection of the living tissue.

Which procedure is appropriate is a decision officials and ministers are adamant must be left strictly to experts. Where they do see the need to prod the professionals occasionally is at the opposite of the glamour spectrum, over the chronic complaints. The "Cinderella services"—the mentally handicapped and geriatrics, arthritis and nervous diseases, for example—which occupy so many hospital beds, are constantly at risk of simply being forgotten, and just being allowed to get worse and worse.

Letters to the Editor

Plight of the unemployed

From the Chairman of the Federation of Personnel Services

Sir—You carried a report (Sept. 8) by the Association of Professional Employment Agencies on unemployment. The Federation of Personnel Services, which represents over 135,000 private employment agency offices, totally disassociates itself from the extreme and dangerous views expressed in that report.

Unsubstantiated generalisations about the unemployed refusing to take jobs, wild attacks on the education system or misinformed criticism of the Government's job centres are an insult to the unemployed. Such comments do little to help those who are striving to improve the quality of our schools and job-finding services.

Of course, there are poor schools, inefficient job centres, and individuals who exploit the welfare state, but that is no excuse for misleading the public by suggesting that these isolated deficiencies are widespread. Before attacking the unemployed, perhaps the people who compiled this report should spend a few days on the dole in Belfast, the North East or South Wales and see for themselves how desperately difficult it is to find a job.

The Federation of Personnel Services has itself given evidence to the House of Commons Employment Committee identifying areas of skills shortage and serious gaps in the country's training and education services. The Federation of Personnel Services has regular meetings with the Manpower Services Commission, civil servants and politicians at which it criticises various aspects of public policy and makes positive recommendations as to how improvements can be made.

It is in this way that the private employment agencies can play an active role both in helping to alleviate the problem caused by the economic recession and a shrinking labour market and in meeting the challenge that is offered by the new technology.

Edward Hurrell, Chairman, The Federation of Personnel Services, 120, Baker Street, London W1.

Link between jobs and costs

From Mr. C. Thompson

Sir—Samuel Britton in his article on the real link between pay and jobs published on September 4, makes the point that some industrialists believe that labour costs are only a small portion of their total costs, a view that has widespread credence in the population at large.

This view is wholly mistaken. A logical analysis of the fundamental nature of costs shows that labour costs are a 100 per cent of total costs: there are no other costs. Only people require payment and costs which appear in a company's accounts as non-labour are in fact payments for the labour of people not employed by the business in question but by its suppliers. This is always the case if the bill is followed far enough. Even taxes are ultimately labour costs.

Terror in toothpaste

From Mr. David Fletcher

Sir—There was a slightly flippant undertone to Mr. Watson's article (September 4) on research and safety standards entitled "The Terror in a Toothpaste Tube" but the subject is one of importance—all the same; and Mr. Watson makes some valid points as when he rightly stresses the difficulty of linking convincingly cause and effect. This goes for the benefits of course, as much as for the ill effects and springs from the impossibility of satisfactorily discovering and isolating the relevant data. Human beings after all, cannot be treated as test animals and isolated in a laboratory from all other external factors.

There is also, not mentioned by Mr. Watson, the time factor. Chronic poisoning may only manifest itself after 20 or 30 years and this makes any pinpointing very difficult. Another point Mr. Watson might have mentioned is the mistake of finding a single cause for an effect when, as likely as not, that effect has been brought about by a multiplicity of causes, none of them particularly harmful in themselves but decidedly so in combination. For example, in view of Mr. Watson's title, let us take the question of fluoride in toothpaste, possibly harmless enough for the majority of people on its own, but no product functions in a vacuum. When added to all the other minute amounts of poison that we daily accumulate from a great variety of sources, may not these small quantities of toxic substances prove to be, as it were, the last straw that will tip the scale between health and ill-health?

Mr. Watson seems to be saying that because cause and effect in these cases cannot be easily co-related, not too much notice should be taken of claims of ill effects arising from the consumption of commercial products. But surely it is this very uncertainty that demands that extra precautions should be taken. After all, we may live longer than our mammoth-hunting ancestors, but the health of most of us is hardly something to boast about.

David Fletcher, 19, Victoria Road, Brighton.

No place for animals

From Mr. Lesley Sargeant

Sir—I agree with Mr. Watson (September 4) that the present safety testing system for consumer goods is notoriously unreliable. Toxicity tests on animals have little scientific validity to man and, in many cases, are merely a thoughtless completion of standard protocols which have remained unchanged for 20 years. The only concession to demands for improved safety has been an increase in the number of animals used, in real

terms there has been no improvement.

The fact that an estimated 80 per cent of cancer is environmentally induced illustrates the inadequacy of safety tests and the necessity to introduce efficient and reliable screening techniques.

Reliable and practical alternatives do exist. Non-animal techniques, such as tissue culture, computer modelling and bacterial tests for carcinogens are fast becoming incorporated into standard protocols with subsequent reductions in cost and time taken for toxicity testing. A tenfold reduction in cost and a fivefold reduction in time is envisaged. (Dr. I. Munil et al. *Science* 1976 193:834)

Clearly, this would lift the burden of expensive and time consuming animal tests currently hindering the manufacturing industry. Recognising the need to rationalise and redefine current toxicity testing FRAME (Fund for the Replacement of Animals in Medical Experiments) has sponsored a committee of scientists to evaluate the present system and assess the potential of alternative techniques. Hopefully, the committee's recommendations will be widely accepted and lead to a safer, more efficient testing system to protect the public and the manufacturers.

Lesley Sargeant, Scientific Officer FRAME, (Fund for the Replacement of Animals in Medical Experiments), 312a Worple Road, London SW12

Refreshing journeys

From Mr. Adrian T. Lamb

Sir—Rail fares, it is generally agreed, are fairly high, and one would think that some sort of inspection could be made of the train before it leaves, especially of the washing facilities and the lavatories. On a recent journey I made, I found the tops of both hot and cold taps had been removed—or, perhaps, "wrenched off"—would be a better description—the foot pedal for flushing the lavatory had been torn out and the roller towel (there was no paper one) was broken and the towel had been pulled out so that the towel was trailing on the floor. It is obvious that vandals must enter the train with tools to do this damage for it would be impossible for anyone without tools to do it.

The first-class accommodation could do with more frequent cleaning, both on compartment type trains and non-compartment type ones: usually the carpets in the non-compartment type (first-class, of course) are either nearly worn out or horribly dirty and the seats, incidentally, are no more comfortable than the seats in the second-class area. The compartment type trains suffer in first-class from careless smokers dropping ash on the seat, worn edges to the seats (from slovenly persons putting their feet complete with shoes on the seats immediately opposite them, which is, also, unhygienic), spilled coffee/tea on the small table by the window and overflowing ash-trays and more annoying to the long-distance traveller who may wish to sleep, rattling ash-trays and windows. Inadequate heating persists on nearly all trains in one area or another—or heating

which, when switched "on," fails to produce any heat.

Does BR want you to arrive refreshed after a (so-called) first-class journey? I must confess that I doubt that you will.

Are there no cleaners or inspectors (for cleanliness) to be found on the staff at British Rail?

Adrian T. Lamb, 44, Portland Road, Leicester.

Subsidy for road users

From Mrs. J. M. Meguyer

Sir—I have read the Press reports which say that Mr. Norman Fowler, Minister of Transport, is considering introducing a fixed Road Fund Licence to be levied on any motor vehicle, roadworthy or otherwise, in use or laid up provided it is owned by an identifiable person or legal entity.

I am sure that no one needs to be reminded that the Road Fund was established for the purpose of raising money to be applied to the maintenance and upkeep of the Queen's Highway, and the mounds in that fund have been diverted to other purposes by successive Governments over the years.

There can be no doubt that any reasonable person would agree that this particular tax should be in proportion to the use of, and therefore the wear and tear on, the roads of this country.

The most equitable and economic solution would be the imposition of a surcharge on the price of fuel. This method would deal with the minority of road tax fiddlers, and enable a reduction in number of the notoriously inefficient army of civil servants at the Vehicle Licensing Centre in Swansea.

The Minister's proposal will penalise those who only make occasional use of our roads—students with limited resources, the pensioner, the weekend motorist, the motor caravaner, the owner of several vehicles who uses one for business and another for pleasure motoring in the summer months, the restorer and the conservationist. I own and cherish a 20-year-old Jaguar which creates interest everywhere as a splendid example of what British craftsmanship used to build in the days before British Leyland. In summer I average under 1,000 miles in this car and at present I pay tax for the relevant four months.

There are thousands of others like me, many of them painstakingly restoring cars of historic value. In my own club there are more than 8,000 members like myself, most of whom pay for their hobby, as I do, out of taxed income or savings. My elder son is in the middle of a three-year restoration of a Norton motorcycle which has been off the road for the past two years. Does the Minister of Transport seriously expect him to subsidise other road users, or, as one of the honest majority, expect him to pay for the dishonest minority?

The proposal is tantamount to a wealth tax because it would be a tax on ownership and, if implemented, would be nothing short of a betrayal of the principle by which the present Government was elected. (Mrs.) J. M. Meguyer, Pinchot, 36a, Nightingale Road, Rickmansworth, Herts.

GENERAL

UK: Mr. Peter Walker Agriculture Minister, speaks at Kenilworth. Lord George-Brown addresses Westminster Chamber of Commerce lunch, London.

National Farmers Union publishes animal welfare book "Sense of Sentiment". Mr. Denis Thatcher opens Chelsea Antiques Fair, Old Town Hall, SW3 (to September 20).

Sir Peter Gaisden, Lord Mayor of London, opens three-day City of London Flower Show at Royal Exchange. Liberal Party assembly continues, Blackpool, Burlington Antiques Fair, opens, Royal Academy, London (to September 17).

Water Pollution Control Exhibition opens at the Pavilion, Buxton (to September 12). Laboratory 80 Exhibition opens, Grosvenor House, London (to September 11).

Overseas: Two-day talks open in Tokyo between Society of Motor Manufacturers and Trades and the Japanese Automobile Manufacturers Association to discuss economic outlook for UK and Japan.

Today's Events

Argyll Foods, The Stafford Hotel, St. James's Place, SW. 12.

Associated Leisure, The Savoy Hotel, The Strand, WC. 12.

Fobell, Hyde House, The Hyde, NW. 11. Maurice James Industries, Hotel Leatrice, Coventry, 3.

Montague L. Meyer, Charing Cross Hotel, The Strand, WC. 12.

Moorgate Investments, 1 Brewers Green, Buckingham Gate, SW. 4.

Roskill, Anglesley House, Anglesley Road, Burton-on-Trent, 10.

Sekers International, Con-

OFFICIAL STATISTICS

Final dividends: F. and C. Euro-

trust, Land Investors, Sobradie (Holdings), Staffordshire Pot-

teries, Zellers Group, Interim

dividends: Barton and Soas, Bestobell, BICC, Bowater

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Loogman, S. Pearson and Soa, Penios, John C. Small and

Thomas, Standard, Chartered

Bank, Wilson (Connolly) Hold-

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Federico Delgado, Treasurer Vice-President, Industrias Peñoles.

Lawrence Miller, Vice-President, Chemical Bank. Photographed at Industrias Peñoles' Metmex division in Torreón, Mexico.

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potential in the industry and to minimize its dependence on price-sensitive lead and zinc, Peñoles embarked on a major program of exploration and expansion—for which substantial amounts of money were required.

That's when Peñoles got together with Chemical. Of course, Peñoles was doing business with other major U.S. banks. But at a time when the company's expansion ran up against falling mineral prices, Chemical Bank was both receptive and responsive. With Lawrence Miller's knowledge of the company, and his confidence in management's ability to handle their ambitious program, he arranged to

lend Peñoles over 50 million dollars. With the funds provided, Peñoles substantially increased capability. And with Mr. Miller's demonstrated understanding and responsiveness to the company's changing needs, Mr. Delgado has since come to him for help with investments and cash management services.

Based on the professionalism exhibited on both sides, the relationship between Mr. Delgado and Mr. Miller has ripened into one of mutual respect. That's what usually happens when corporate officers get together with Chemical bankers. And what results is long-term benefits for both the company and the bank.

The difference in money is people. **CHEMICAL BANK**

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MINING NEWS

BIDS AND DEALS

North Broken Hill has another good year

BY KENNETH MARSTON, MINING EDITOR

AS INDICATED at the half-yearly AGM, a further strong performance for the year ended June 30 has been turned in by North Broken Hill, the Melbourne mining and investment company in which a 10 per cent stake is held by the Consolidated Gold Fields group.

Net profits before extraordinary items have advanced to \$348.6m (£23.5m) from \$285.9m (£19.7m) in 1978-79.

The extraordinary items, which are a surplus on disposal of investments which brought in \$54.4m.

North Broken Hill is paying a final dividend of 10 cents to shareholders, a total of 18 cents which compares with 12 cents for 1978-79.

The gross profit from lead-zinc-silver mining operations rose to \$251.58m from \$229.73m. But after New South Wales royalty and income tax have taken their share, the net figure stands at \$151.57m against \$130.88m, a crushing answer to those in Australia who seek higher mining taxation, claiming that the companies are making too much money out of irreplaceable natural resources.

Net investment income, and equity in net profits of associated companies rose by 73 per cent mainly as a result of higher dividends from Alcoa, Australia and increased profits of Associated Pulp and Paper Mills.

North Broken Hill takes a confident view of the current year. It is pointed out that although the prices of lead and

Agnico-Eagle's rising profits

EARNINGS of Canada's gold and silver-producing Agnico-Eagle Mines continue to stride ahead in line with the precious metal prices. Second-quarter net income of \$28.47m (\$38,000) has risen that for the 1980 first half to \$57.03m, equal to 50.5 cents per share, from \$52.5m in the same period of last year.

Gold production in the latest period fell slightly to 28,418 oz from 30,429 oz a year ago as a result of lower ore grades but the decline was partly offset by an increase in ore milling.

The group's silver division produced 125,206 oz of silver, against only 47,198 oz last time.

Agnico-Eagle proposes to sink a new shaft at its Eagle mine to provide access to the south-easterly extension at depth of the main body in the Tebel portion of the gold property. Work is to start before the end of this year and the shaft, together with plant and underground development, is expected to cost some \$35m.

Meanwhile, interesting gold values have been obtained at the

PHILIPPINES URANIUM

Australia is to give substantial help in a five-year search to find and define prospective uranium mining areas in the Philippines.

An agreement in principle has been reached between the two countries for Australia to provide \$2.5m more than half of the \$4m pesos (£1.9m) planned investment.

Australia will provide technical experts, technology to conduct airborne and radiometric surveys, and training.

In Manila, Rufino Bonosano, chief of the uranium and coal division of the Bureau of Energy Development, said the formal agreement was expected to be signed this year and work would start in the first quarter of 1981.

The first area to be surveyed will include the northern part of the main island of Luzon and the islands of Mindoro, Catanduanes, Polillo and Masbate, all in the central Philippines.

Bonosano forecasts that the project would pave the way for more detailed exploration by private sector companies.

ROUND-UP

management at the Consolidated Gold Fields group's Renison tin mine in Tasmania. About 450 men have been on strike for some two weeks over a pay claim. The strike is losing Renison production of some 100 tonnes of tin in concentrate a week.

World Bank finance will be made available for a copper and zinc ore mining project in Ecuador. The International Finance Corporation, a World Bank affiliate, and Metallgesellschaft AG, West Germany, will each lend \$1m (£413,000) to the Compania Minera Toachi which has been carrying out a small

copper and zinc mining project south of Quito. The Ecuadorian company plans to move more than double its output to about 60,000 tonnes of ore a year.

The business of East Rand Consolidated in South Africa has been transferred to a wholly owned subsidiary, African Exploration Investments. The local incorporation of the branch's assets is intended to place it in a better position to take part in South African mining and development. The net value of the East Rand Consolidated assets in South Africa at the end of 1979 was \$313,800 (£172,000).

Mining Supplies' offer values Scott at £6.2m

BY REG VAUGHAN

MINING SUPPLIES, the Doncaster-based mining machinery manufacturer, has launched a full bid for Laurence Scott, the loss making electrical machinery and control gear maker. This move comes 31 months after Mining Supplies took its shareholding in Scott up from 4 per cent to 21.18 per cent in a buying operation known as a dawn raid.

Mining Supplies is offering 8 of its shares for every 17 Scott shares. At yesterday's close of 140p (down 3p) for Mining Supplies, the bid values each Scott share at 65.58p and compares with Scott's closing price of 66p, up 6p. On this basis the shares not already owned by Mining Supplies are valued at £4.5m and the entire Scott equity at £6.2m.

To comply with the takeover code, there is a cash alternative of 60p per Scott share—the highest price paid by Mining Supplies for Scott shares in the past 12 months.

Mr. Paul Tapscott, chairman of Scott, said yesterday he was "not surprised" by the bid announcement, but the "price on the face of it is an undervaluation." The latest Scott accounts show a net asset value of 196p per share after allowing for a property revaluation.

In a holding statement, Scott is advising shareholders to take no action until they hear from the board. The directors, who are being advised by Samuel Montagu and Co., expect to reply to the bid by the end of the week. There has been no contact between the two companies since the raid on Scott's shares by Rowe and Pitman in May.

Both Advest Group, with 7.54 per cent of Scott's shares, and Prudential Assurance with 5.47 per cent, were reserving their positions on the bid yesterday.

Mining Supplies and Scott have substantial areas of common interest. Scott provides Mining Supplies with electric motors and other related items

and also does a lot of work for the coal mining industry, an area where Mining Supplies is heavily involved.

Mr. Arthur Saipie, chairman of Mining Supplies, said yesterday that the acquisition of Scott would help build up the group's work market. Mining Supplies already had important development contracts with Scott and he wanted to develop these.

Mr. Saipie felt that the deal would be to the advantage of Scott shareholders. "The group has been going downhill more each year and may have further to go. The record is not good," he said. Mr. Saipie was critical of the recent revaluation carried out by Scott, describing it as "a window dressing."

In the year ended March 31, 1980, Scott showed a pre-tax loss of £1.87m compared with £1.35m, after a second half deficit reduced from £381,000 to £201,000. Of the year's deficit, the engineering dispute cost around £1.1m, while losses in the control gear and heavy motor businesses cost around £1m together. The group was looking to an upturn in the current year after a small loss in the first half. Turnover in 1979-80 rose by 6 per cent to £39.3m, which the directors said reflected a fall in volume and competitive pricing worldwide.

For Mining Supplies, 1979-80 saw a strong recovery in the second half. The year's pre-tax profit went up from £2.27m to £3.31m on a turnover of £24.5m against £20.4m. Profits in the first half fell by £670,000 to £551,000 due to the engineering strike.

JEFFERSON SMURFIT Jefferson Smurfit, the Irish paper and packaging group, is to further increase its shareholding in the Alton Box Board Company of the U.S. This is in accordance with an agreement made in July 1979, when Smurfit took its interest in this Illinois-based company up from 27 per cent to 51 per cent.

St. George's share block changes hands

The directors of St. George's Laundry, together with the Armstrong family which successfully fought off a takeover last year by Provincial Laundries, have placed much of their holding in friendly hands.

Mr. Peter Dellar, a property dealer once linked with Mr. Malcolm Horsman, and Mr. Philip Dobson have agreed to buy 600,000 shares (26.7 per cent) at 80p and jobs the board.

A further 18.27 per cent has been placed with investment clients of Simon and Coe and the family and directors will keep 26 per cent.

Provincial holds 16.12 per cent after making first a full offer and then a partial bid in November last year. That leaves only 13 per cent in independent shareholders.

During the contested bid battle St. George's carried out a professional valuation of its properties which threw up a surplus over book value of £300,000. According to the directors at the time, this surplus would have produced net tangible assets of 71p a share.

Yesterday in the market the shares rose 19p to 65p.

chased a further 100,000 ordinary. E. G. Barratt, M. Keble and J. B. Emmott, directors of AP, are directors of Emmott Foundation.

Gold and Base Metal Mines—Mr. Edward Nassar and his associates are beneficially interested in 308,500 shares (3.008 per cent).

Manson Finance Trust—G. R. Hirschman and C. Crutwell (trustees of the E. E. Goldie Settlement) have sold 25,000 shares, G. R. Hirschman and C. Ralton (trustees of the L. Goldie Settlement) have sold 25,000 shares. E. E. Goldie has sold 25,000 shares. E. E. Goldie and G. R. Hirschman are directors of Manson. The beneficial interest of A. Lawson, director, has been reduced by the sale of 225,000 shares.

Slough Estates—D. M. Mills has been allotted \$3,838 ordinary following his exercise of an option under the executive share option scheme. Mr. Mills gave instructions for the sale of 39,838 shares and the reacquisition of 2,000 shares in favour of his children, both of whom are over 18 years of age. Mr. Mills retained 12,000 shares.

MACKINNON PREF. On September 5 Dawson International had received acceptances from 77 shareholders in respect of 80,200 Mackinnon of Scotland 74 per cent preference (\$3.47 per cent). Dawson has declared the offer unconditional. It will not be increased but will remain open until September 24.

FOSECO/UNICORN Foseco Minsep announces that the offer for the preference shares of Unicorn Industries has been accepted in respect of 168,858 shares (39.7 per cent). The offer is extended to September 29.

OIL AND GAS NEWS

Double Eagle/Warrior leap on Alaskan oil hopes

BY STEPHEN THOMPSON

OIL AND gas share markets were highlighted yesterday by the remarkable performance of the Canadian companies Double Eagle Energy and Resources and Warrior Resources.

In London, Double Eagle followed Friday's spectacular 190p rise with another of 190p and closed at 610p while Warrior, up 75p on Friday, soared 100p to 1650p.

Both companies are registered in Vancouver, British Columbia, and are traded in London under Rule 183(1)(a).

The surge of buying demand followed an announcement on Friday that an exploration well drilled in the Cook Inlet of Alaska—Simpco-Kaldachuna No. 1—has encountered "potential hydrocarbon bearing zones, as evidenced by wireline logs, surrounding the oil shows lagged during drilling."

Logging is the electric recording by downhole instruments of the physical properties of the penetrated formations and their fluid content.

The well is currently at a depth of around 11,687 feet and is drilling ahead to a target depth of 12,500 feet.

Double Eagle and Warrior says that the lagged zones will be tested for productive capacity upon reaching total depth. They expect drilling and testing to be completed in two to three weeks.

Double Eagle has a 62.5 per cent working interest in the well, which will reduce to 37.5 per cent while Warrior has a 22.5 per cent holding in Double

Eagle and the option to purchase 7.5 per cent in any further wells in the concession area. Same Energy has the remaining 37.5 per cent in the discovery well.

As well as searching for oil in Alaska, Warrior/Double Eagle are involved in oil and gas exploration in Oklahoma. There the company's Q1 No. 1 well in Seminole County encountered both oil and gas.

The third exploratory well, in Oklahoma, Simco-Ponder No. 1, has been plugged and abandoned, while a fourth well, Simco-Krass No. 1, was scheduled to reach target depth of 6,600 feet last weekend.

Australia's International Mining Corporation (IMC) has discovered oil shale on its oil shale prospect near Mount Coolon in Queensland.

The prospect covers 102 square km and IMC has applied for authorities to prospect in the general Mount Coolon region covering a total area of 1,580 square km.

According to IMC reconnaissance drilling on the prospect has produced shale containing up to 133.80 litres of oil per tonne at a depth of less than 55 metres.

IMC says that the shale was hit by three holes which indicated it is up to 10.36 metres thick and probably contains over a distance of six kilometres.

However, IMC added that it is not known whether there are further shale deposits below the intersected horizon as the drilling ended just below it. A further drilling programme to

determine the extent of the oil shale commenced yesterday and is to continue to December.

At another oil-shale site, the Sutor River prospect, around 60 km north of Mount Coolon and covering 320 square miles, two out of six drill holes encountered low grade oil-shale.

The Netherlands subsidiary of Union Oil of California has made another oil discovery in the Dutch sector of the North Sea.

The well, Q/1-9 was drilled by Union Oil Company of the Netherlands and flowed at a rate of 1,941 barrels of 26.4 API gravity oil from an interval between 4,953 and 4,888 feet. The discovery is in the Q/1 Block in which Union already has announced two commercial discoveries, the Helm and Eelder fields.

Further appraisal drilling in the Q/1 block is planned before development plans will be completed. Q/1 is held jointly by the Union subsidiary of the Royal Nedlloyd group of the Netherlands.

The fourth and last of a series of wells to determine the extent of the Dullingeri Muru oil accumulation was spudded last Friday. The well, Dullingeri No. 8/DM4 is located 3 km east-north-east of Dullingeri No. 7/DM3, which was plugged and abandoned last week. Target depth is 5,200 feet.

Interests in the well are Santos, 50 per cent, Delhi Petroleum, 30 per cent, Vamgar, 10 per cent and South Australian Oil and Gas, 10 per cent.

RESULTS AND ACCOUNTS IN BRIEF

FAMILY INVESTMENT TRUST—Results for six months to July 31, 1980: Gross revenue £28,527 (£18,315); including deposit interest and underwriting income £7,500 (£5,281); Net earnings for the ordinary £12,314 (£10,102) after tax £7,055 (£5,987); Expenses £28,319 (£21,251) and loan interest £2,500 (£2,000); equivalent to 2.25p (2.49p) per share. Interim dividend 2.5p (2p) to reduce ordinary—last year's total was 8.5p. Net year value per share 123.5p (120.7p) at January 31, 1980.

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In difficult circumstances, the Group's results must be regarded as satisfactory.

Turnover increased by a third to £315m, of which the overseas content rose to 50%. Pre-tax profit increased 20%.

In the current year the continuing expansion of Aerospace, Defence and Electronics activities will be largely offset by a temporary decline in Mining and Industrial Hydraulics.

Longer term prospects for increased coal extraction world-wide are excellent.

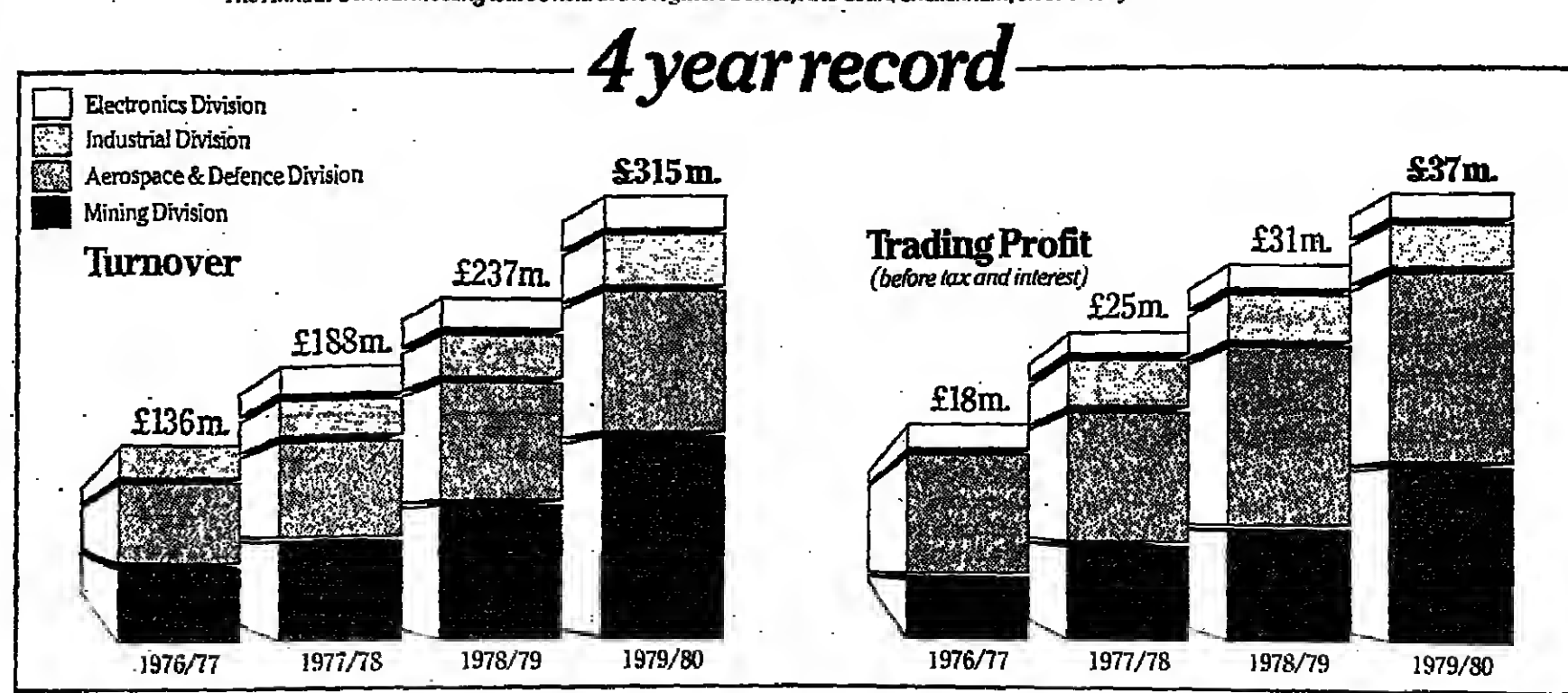
Capital investment this year will again exceed £20m and we are increasing expenditure on training engineers and craftsmen.

With reasonable wage settlements, we intend to take full advantage of the many and diverse opportunities for re-establishing the growth pattern of recent years.

The Annual General Meeting will be held at the registered office, Arle Court, Cheltenham, on Thursday 2nd October at 11.00 am.

Results in brief	1979/80	1978/79
Turnover	£314,553,000	£236,749,000
Profit after tax	£34,686,000	£23,345,000
Earnings per share	25.7p	17.5p
Dividends per share	4.5p	3.75p
Times covered by profit after tax	5.7	4.7

Copies of the 1979/80 Chairman's Statement with the Report and Accounts available from:
The Secretary,
Dowty Group, Cheltenham,
Gloucestershire.



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COWAN, de GROOT LIMITED

Extracts from the Chairman's Statement for the year ended 30th April 1980

	1979/80	1978/79
Turnover	£44m	£39m
Record Pretax Profits	£2.6m	£2.2m
Assets per share	73.3p	63.1p

"The excellent results reflect the efforts that each company in the Group has made to combat increased overheads and at least maintain its margins. It is particularly gratifying bearing in mind the difficult times through which the industries in which we are engaged have been - and still are - passing.

The total dividend of 3.5p per share represents a 28% increase on last year's.

We shall best meet the challenges of today's trading conditions by remaining steadfast to our philosophy of providing products of quality and value, by maintaining and fostering the good relationships we have with our suppliers, and by giving our customers the best service we can.

We look forward to the future with confidence and hope that we will continue to maintain the unbroken record of progress which we have been fortunate enough to produce for shareholders over such a very long period."

Demick Cowan, Chairman



4 DIVISIONS: — TOYS AND SOFTWARE PRODUCERS — ELECTRICAL AND HARDWARE
WHOLESALES — MACHINERY IMPORTERS — RUSSIAN SHOP
COWAN, de GROOT LIMITED, 11 JOHN STREET, LONDON WC1N 2EE.

Companies and Markets

Metal Closures' profits slip to £2.56m midway

TURNOVER OF Metal Closures Group, metal and plastic products maker, principally for packaging, rose from £39.58m to £44m but pre-tax profits for the first half of 1980 slipped to £2.56m, compared with £2.78m.

Mr. John Boden, chairman, says there is no way in which the packaging industry can expect to be sheltered from the general recession; a rapid decline in customer requirements has reached a significant level in all areas of the group's UK business. "Stringent remedial action has been taken, as there are no signs in the foreseeable future that the present trend is diminishing," the chairman adds that these conditions must result in lower UK profitability, to some extent offset by buoyant overseas earnings.

Half-yearly earnings per 25p share are shown as 7.19p (10.02p) but the interim dividend is unchanged at 2.5p net—last year's final payment was 3.2p paid from pre-tax profits of £5.51m.

Tax at £984,000 (£674,000) is at a higher rate since it is anticipated that no benefit will arise from stock appreciation relief in the current year. After minorities of £142,000 (£93,000) and preference dividends of £7,000, the attributable balance was down from £2m to

£1.45m, of which the interim will absorb £443,000 (same).

comment

Although Metal Closures is one step away from the consumer trade it has been hit by the retail squeeze as its customers reduce orders. The group's food and drink packaging products, particularly for whisky makers, have suffered while plastic packaging for the textile industry has also been hit. In the first six months of 1980 it was the South African operation which saved the day: a contribution of around £800,000 from SA represented a 56 per cent increase and held the group's profit decline to only 8 per cent. UK packaging profits were down at least 25 per cent meanwhile and this trend could continue in the second half. In addition, the group has made 400 of its 3,000 workforce redundant in the first half of this year, a cost which will show up at year end. The poor summer weather will also reduce earnings and the full year pre-tax profit could be down to £5m or less against last year's £5.5m, suggesting a fully taxed p/e of 5.7—unexciting with a prospective yield of 8.5 per cent at 93p. But the company does have reasonable balance sheet strength and no borrowings, a good position to be in during the current recession.

BOARD MEETINGS

The following companies have notified dates of Board meetings to the Stock Exchanges. Such meetings are usually held for the purpose of considering dividends. Official indications are not available as to whether dividends are intended or final and the subdivisions shown below are based mainly on last year's timetable.

TODAY	
Interim: SIC, Barton and Sons, Sestell, Bowater, Onish, Bacon, S. W. Farmer, Pearson Longman, S. Pearson, Fenwick, Reckitt and Co., John C. Small and Tidman, Standard Chartered Bank, Wilson (Connolly), Fines: F. and G. Eurotrust, Land Invest, Soborn, Staffordshire Pottery, Zetters.	
FUTURE DATES	
Interim:	Sept. 15
Stratford Engineering	Sept. 18
Brecon and Cloud Hill Lims	Sept. 19
Works	Sept. 19
Canning (W.I.)	Sept. 19
Commin Holdings	Sept. 19
Eagle Star	Sept. 17
Excelsior Clothing	Sept. 17
Federated Land	Sept. 15
Liverpool Daily Post & Echo	Sept. 15
North British Canadian Ins.	Oct. 3
Rio Tinto-Zinc	Sept. 17
Schneider	Sept. 11
Solicitors' Law Stationery Society	Oct. 2
Ward White	Oct. 3
Interim:	Sept. 12
Becker Metall	Sept. 15
Chembars and Fargus	Sept. 15
Kinross Mines	Sept. 12
Leslie Gold Mines	Sept. 12
St. Helens Gold Mines	Sept. 12
Unifal Gold Mines	Sept. 12
Winkelsbank Mines	Sept. 12

Illingworth Morris still cutting inventory levels

TO COMBAT the high level of interest rates and to reduce bank indebtedness at Illingworth Morris and Co., the policy of cutting inventory levels which started last October will be continued ruthlessly, Mr. Donald Hanson, chairman, says in his annual report.

Stocks last year were reduced by 55m and targets have been set which could lead to a similar reduction for the current year. The group's balance sheet as at March 31, 1980 shows stocks at £34.14m (£39.03m) with overdrafts at £22.94m (£21.54m). Shareholders' funds amounted to £25.92m (£29.68m).

A loss before tax of £2.46m was incurred in 1979-80 compared with £3.56m profits previously. External sales amounted to £109.72m against £120.8m.

Despite the absorption of funds by the losses, the group has not increased the level of borrowing, the chairman says. Trading conditions have been far from ideal but the chairman believes the policies which have been adopted to strengthen the group will begin to bear fruit in the current year.

Wool merchandising traded very profitably in 1979-80 but taping and combing were seriously affected by the decline

for worsted type fabrics and therefore corrective action had to be taken to bring productive capacity into line with demand. Westbrooke Laminol traded profitably, maintaining its position as a world leader in the refining and marketing of the by-products of woolgrease.

With the exception of the highly efficient operation at Daniel Illingworth and Sons, the worsted spinning units were subject to major rationalisation and during the course of the year four units were concentrated into two. This was an expensive exercise but the reduced capacity and the efficiencies created by the concentration will enable the units concerned to improve their return on capital employed, the chairman says.

Due to a reduction of over 40 per cent in the worsted manufacturing base, the group is now approaching the level warranted by assessments of world-wide demand. The operation has been costly and, apart from the specified reorganisation and extraordinary costs, also included many indirect expenses which have been taken as trading losses. Woolen units have continued at a satisfactory level of profitability and the overall outlook remains favourable. The clothing division continued

to progress well and contrary to the overall trend in this sector, maintained profitability. Cloth merchandising domestic sales were well maintained. To enhance future profits, the total merchandising function has now been concentrated in the West of England.

In May this year, Leon Block Company was formed to acquire a vehicle for the sale of luxury clothes produced by members of the group. Leon Block is well established already in the top quality ladies' clothing market, selling to major department stores.

Directors anticipate the Leon Block company to expand and to increase the use of IM products and the promotion of the IM name throughout the group. The company is authorised to raise £1,330,000 (£853,000) and £585,000 (£844,000) contracted but not provided.

The accounts also show a £350,000 payment as compensation for loss of office. Large shareholdings in the group are held by Mrs. P. D. Maen, D. N. Ostrer, G. A. Lightman, Woolcombers (Holdings) and Lathbury Investment. Meeting, Shipley, West Yorkshire, September 30 at noon.

NEI

Interim Results

6 months ended 30th June 1980

Points from Review by the Chairman, Mr. Duncan McDonald, CBE

- Significant recovery from previous half year.
- Good order intake in mechanical engineering and mining sectors with success in developing new markets.
- Balance sheet remains strong... progressive capital investment and development programme being maintained.
- Increasing profit contribution from overseas companies.
- Given the difficult economic environment, the Company's position overall is encouraging.

	Half Year Ended 30.6.80	Year Ended 31.12.79
Turnover	£271.8m	£453m
Profit before taxation	£12.55m	£18.13m
Profit attributable to NEI Shareholders (after taxation and extraordinary items)	£7.696m	£7.927m
Earnings per ordinary share (excluding extraordinary items)	5.06p	5.85p
Dividend per ordinary share	1.25p	3.75p

Northern Engineering Industries Ltd

NEI House, Regent Centre, Newcastle upon Tyne, NE3 3SB, England

NEI House Publications Ltd • NEI House Engineering Ltd • NEI House Engineering Ltd • NEI House Engineering Ltd • NEI House Engineering Ltd
NEI Electronics Ltd • NEI International Construction Ltd • NEI John Thompson Ltd • NEI Parsons Ltd • NEI Reynolds Ltd • NEI Thompson Cook Ltd
NEI International Ltd • NEI Overseas Ltd • NEI Projects Ltd

Robinson Brothers setback

PRE-TAX REVENUE of Robinson Brothers (Ryders Green), the organic chemicals manufacturer, fell from £310,000 to £245,000 for the half year to June 30, 1980. Turnover was £5.58m, compared with £6.23m last time.

The directors say the decline in profits reflects the onset of an adverse trend in trading conditions which is increasingly affecting the whole of the company's industry.

This trend is intensifying and the company can expect little, if any, addition to after-tax profit in the second half, the Board adds.

Based on the estimated results for the year to January 3, 1981, the directors believe there will be no corporation tax payable in respect of this year.

J. Dyson capital spending

MR. G. A. LOMAS, chairman of J. and J. Dyson, says completion is near of the largest capital expenditure programme in the group's history, mainly to enable the manufacture of high-technology refractory products. During the current year, these products will be sold on a worldwide basis and should make a significant contribution to group

Murray Glendevon pays more

REVENUE of Murray Glendevon Investment Trust improved from £308,836 to £468,770 in the year ended July 31, 1980, before tax of £161,358 against £147,077.

A final dividend of 1.75p Hfs the year's total from 2.1p to 2.55p. The directors are also declaring an interim dividend of 0.9p (£0.8p) for the current year.

Stated earnings per share are 3.07p against 2.24p (2.44p) assuming full conversion of the "B" ordinary shares. Dividends for 1979-80 absorb £254,461 (£207,523) and £239,633 against £188,730 is carried forward.

Net assets at July 31 amounted to £15.51m (£12.38m) and net asset value per ordinary and "B" ordinary is 147.6p against 119.5p.

LONDON TRADED OPTIONS

expenditure programme in the group's history, mainly to enable the manufacture of high-technology refractory products.

During the current year, these products will be sold on a worldwide basis and should make a significant contribution to group

inflation and the strength of sterling are affecting activities. The present conditions are a challenge but the chairman is certain the group has the necessary technology and management expertise to deal with the situation.

LONDON TRADED OPTIONS							
Option	Exercise price	Oct.		Jan.		April	
		Closing offer	Vol.	Closing offer	Vol.	Closing offer	Equity close
BP	300	62	80	1	30	66	55p
BP	330	34	23	36	1	60	—
BP	360	17	80	23	5	—	—
BP	390	5	15	25	1	20	174p
Com. Union	500	80	3	103	15	185	56p
Cons. Gold	550	50	46	75	17	90	17
Cons. Gold	600	22	51	48	1	—	—
Courtauld	70	5	—	—	1	9 1/2	2 1/2p
Courtauld	80	3 1/2	—	—	20	—	—
GEC	330	184	8	198	—	—	501p
GEC	420	94	6	116	—	—	—
GEC	480	56	1	94	—	104	—
GEC	500	20	6	59	—	78	—
GEC	550	16	6	34	2	51	—
Grand Met.	128	57	23	43	—	—	154p
Grand Met.	140	18	—	26	5	61	—
Grand Met.	160	3	10	14	7	20	5
Grand Met.	180	11	—	5	—	12	—
ICI	200	31	—	12	24	24	354p
Land Soc.	353	34	6	48	26	—	374p
Land Soc.	380	12	16	27	—	43	—
Land Soc.	400	1	27	28	—	—	105p
Land Soc.	420	1	30	15	—	12	—
Land Soc.	440	1	31	1	1	98	—
Land Soc.	460	1	32	26	11 1/2	—	—
Land Soc.	480	18	37	28	44	1	410p
Land Soc.	500	6	42S	20	50	22	—
Totals							
		November	February	May			
Imperial Cp.	80	7 1/2	50	11 1/2	—	12	—
Lonrho	104	12	12 1/2	11 1/2	15	—	87p
Lonrho	114	7	12 1/2	—	—	—	94p
Lonrho	114	6 1/2	—	6	—	—	1
L.O.	140	7	4	—	14 1/2	—	133p
Land Soc.	220	11 1/2	3	120	—	—	322p
Rascal Elec.	390	65	41	71	—	54	—
Rascal Elec.	400	59	44	58	—	76	—
Rascal Elec.	350	20	39	39	—	95	—
RTZ	500	22	24	46	1	17	—
Totals			41c	43	—	—	—

BANCO DI NAPOLI — SEZIONE DI CREDITO INDUSTRIALE

US \$84,322,130
Bill Purchase Agreement

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INTL. COMPANIES

Clyde pursues bid for PEL despite support for Peko

BY JAMES FORTH IN SYDNEY

CLYDE INDUSTRIES, the engineering group, has pressed on with its share offer for Production Equipment Limited (PEL), the material handling company, despite indications that the rival bidder, Peko-Walsend, the mining and industrial concern, has already won the day.

Clyde is offering four of its shares for every three Production shares, which at Clyde's closing market price in Sydney yesterday, of \$33.40, puts a value on Production shares of \$54.33 each, and values the latter company at \$18.4m (U.S.\$21.5m).

This compares with Peko's offer of one of its shares plus \$3.22 for every three Production shares worth \$3.44 a share. Both bidders have also announced straight cash offers — Clyde of \$4.15 a share and Peko of \$3.75.

Clyde has also indicated that

Production shareholders can take either all shares, all cash, or a mix of shares and cash.

But the family of the founder, the late Mr. Walter Krass, has indicated that they intend to accept the Peko offer for their 57 per cent shareholding.

It is the second time the Krass interest has stated it will accept a Peko bid. On the first occasion, Clyde had already announced an offer when Peko disclosed a lower counter bid and claimed to hold irrevocable agreements with the Krass family.

Clyde took legal action, and Peko agreed voluntarily to release the family from any commitment. Clyde immediately pressed on with its cash terms, and announced a scrip issue in which Production holders could participate and said that its share offer alternative would be increased.

APPM cuts dividend

BY OUR SYDNEY CORRESPONDENT

ASSOCIATED PULP and Paper Mills ("APPM"), the manufacturer of fine papers, has cut its dividend payment after an 18 per cent drop in profit from \$17.4m to \$14.3m (U.S.\$16.7m) in the year to June.

The reduction was primarily attributed to the absence of past tax concessions, higher costs, and increased depreciation.

Sales rose 12 per cent from \$229m to \$257m (U.S.\$307m) although the directors said that demand slackened towards the end of the year in the international paper market.

Pre-tax earnings actually rose 21 per cent to \$28.5m but without higher investment allowances on new plant, and the loss of the trading stock valuation adjustment, the tax provision jumped from \$4.5m to \$11.9m.

Earnings per share were clipped from 34.46 cents to 23.6 cents a share and the dividend has been cut from 19 cents to 15 cents.

Unexpected increases in the cost of imported wood pulp and fuel oils also affected earnings and forced the company to increase its prices.

Bumiputra issue by MUI

BY WONG SULONG IN KUALA LUMPUR

MALAYAN UNITED Industries (MUI) plans a one-for-one bonus scrip issue and a special issue to Bumiputras (Malays) that would raise its paid-up capital from 32m ringgit to 86m ringgit (\$40m).

The scrip issue will capitalise on 32.1m ringgit from the share premium account, and is subjected to approval by the Malaysian authorities. The special issue to Bumiputras is of 21.77m shares of one ringgit, at a price still to be fixed, and to be approved by the Malaysian authorities.

MUI last month issued 3m new shares (valued at 10 ringgit each) to raise its stake in Central Sugars, the diversified Malaysian group, to 17.4 per cent, from 56.6 per cent, and \$95,000 to take a 21.5 per cent stake in Southern Banking, a Chinese-owned, unquoted bank. The two deals together had a market value of about 40m ringgit (US\$18.7m).

MUI is controlled by Datuk Khoo Kay Peng. Shares of MUI, like those of two other companies, Central Sugars and Pan Malayan Cement, which are controlled by Datuk Khoo, have seen active trading since this year, and have risen sharply.

Until early this year, MUI was a little known concern, running a small finance company and manufacturing plants, with its shares traded at slightly over 3 ringgit. Its shares began an upward climb when Datuk Khoo used the company in March to acquire control of Central Sugars, the refining and invest-

ment group. Yesterday MUI's share rose from 17.2 ringgit to 18.5 ringgit on the issue news, and closed at 17.9 ringgit.

For its first half, ended June, MUI made a pre-tax profit of 14.4m ringgit, and paid a 5 per cent dividend.

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His Excellency Sheikh Hamdan bin Rashid Al Maktoum, Minister of Finance and Industry of the United Arab Emirates, is sponsoring and acting as Honorary Chairman of the first of a series of conferences to be held annually in Dubai, U.A.E., on October 17 and 18, 1980.

The purpose of the first annual conference will be to bring together a distinguished group of Arab World bankers, lawyers and public accountants to discuss and develop the changing roles of their respective institutions. A principal topic will be the developments of the various Arab financial institutions and their present and future roles in recycling the petroleum generated monetary surpluses through the 1980s. The speakers in this context will also discuss how they see themselves relating to each other in the rapidly developing financial and business community on the Arabian Peninsula.

The conference is intended for a sophisticated senior audience of professionals. It is not intended as an introductory overview. It is suggested that participants have a compelling interest and some experience in the area.

The principal speakers will be the chief executive officers of the major Arab international financial institutions, public and private, operating on the Peninsula as well as the international partners of the major international accounting and law firms. As the United Arab Emirates is one of the principal financial centres of the Arab world, Dubai is a particularly appropriate venue for this important meeting.

The conference has been scheduled to immediately precede the Eid holiday so that those participants wishing to bring their families may do so and stay over for the holidays. For those spending the holidays in the Far East Dubai is an excellent departure place.

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ANNOUNCING OUR EUROPEAN OFFICE

Nolan, Norton & Company, management consultants in data processing, announce the opening of their European Office at 26 Dover Street, London. NNC's practice, which serves many of the largest U.S.-based companies, government, and not-for-profit organizations, has been engaged with the information management needs of multinational clients for several years.

To maintain closer contact with client activities in Europe and serve new clients in the European sphere, the Firm has assigned H. Eugene Lockhart, Principal, to head its London office. He will be assisted by a consulting staff of European nationals trained in Firm methodologies at NNC's headquarters in Lexington, Massachusetts.

NNC's broadest objective is to benefit its clients by developing the art of data processing management as they practice it in their organizations. The Firm brings to this task a basic framework of ideas, the stages of data processing growth, originally developed by Richard L. Nolan during his years on the faculty of the Harvard Business School, and a mass of successful practices, data, and special services built up by the Firm since its founding in the mid-1970s.

In its European operations, as in the United States, the Firm will continue to combine analyses of technological innovation in data processing with its evolving understanding of patterns of organizations' growth. Through this thrust, NNC helps managements meet the need for planning and strategic management of data processing as their organizations move to master the potentials of information technology.

In addition to its regular engagements with clients, the Firm's fifth Consortium Research Study, Managing Distributed Data Processing in Multinational Companies, now is underway under the direction of Mr. Thomas Johnson, Director of Research (Lexington) and Mr. Lockhart (London). Results from this study will augment the Firm's developed expertise in data processing management in the European setting.

Mr. Lockhart and his staff stand ready to respond to inquiries about NNC, its capabilities and services. He may be contacted at the London office of the Firm.

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AIRLINE FINANCE

BY GORDON G. KAPLAN

A new way to pay for aircraft

EUROPEAN airlines are facing a crisis in the financing of their capital equipment needs during the 1980s. They will require some \$200bn to replace their ageing fleets with quieter and more fuel-efficient aircraft and to meet the expected growth in traffic during that period. At the same time, their financial resources are being squeezed between ever rising operational costs and public pressure for lower fares.

Claims on public treasuries to meet these financing needs will be resisted since governments have other financial priorities and may simply not be willing or able to provide European airlines with funds on the scale needed.

Finance from the private sector will also be inadequate since most lenders are reluctant to extend credit beyond six to eight years, whereas the economic life of aircraft and other airline equipment lasts well beyond that period. Thus, although the hardware continues to pay for itself over 10 or even 20 years, the airlines must pay off the related debt in a much shorter time: this weakens the airlines' cash flow and curtails their access to fresh capital.

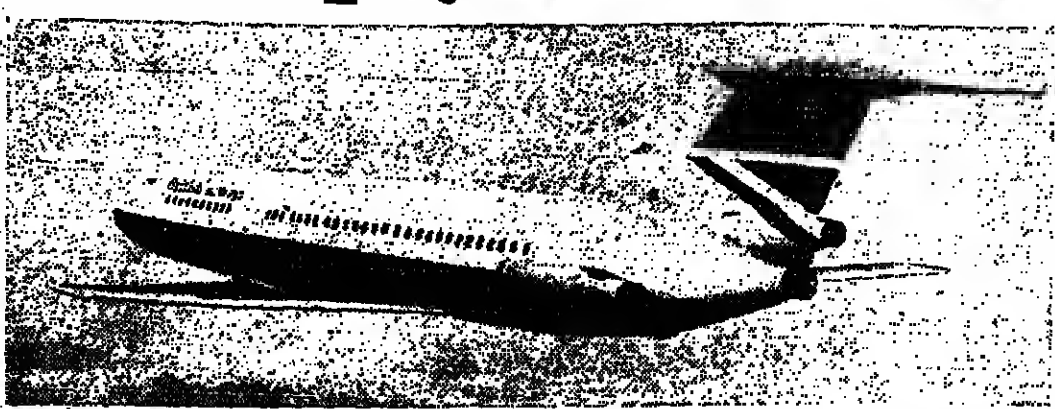
Moreover, lenders for even conventional periods must find their way through a maze of legal, tax and financial complications in various countries in order to make the loans and obtain adequate security. These obstacles to efficient financing are overcome—if at all—only at much time and expense to all parties.

New solutions to these problems are thus urgently needed: what is proposed is the creation—in the framework of an international treaty—of a common European agency through which airlines could borrow long-term capital equipment finance on international markets, and lenders could obtain a secure and uniform legal and tax regime for their loans.

Shareholders

In essence, the proposal is for European governments to be shareholders in a joint finance company, European Company for the Financing of Capital Equipment for Airlines (EUROFINAIR), which would use its own equity capital and loans raised on international markets to purchase aircraft and other major items of capital equipment for European airlines.

Upon purchasing such equipment EUROFINAIR would then supply it to airlines of member countries under hire purchase or conditional sale contracts for periods equal to its anticipated



British Airways Trident, due to be phased out by the late 1980s.

useful life. Payments made by the airlines under these supply contracts, which would be guaranteed by member governments, would be set at the level necessary to amortise the loans raised by EUROFINAIR, and to provide the joint finance company with a return on its equity capital and to cover its operational costs and financial reserve requirements. Ownership of the equipment would pass to the airlines upon final payment under the supply contracts.

The international treaty framework would grant EUROFINAIR, its debt instruments and equipment supply contracts a special legal and tax status uniformly applicable in all member countries. This "treaty status" would provide for:

- Recognition of EUROFINAIR's retention of title in the equipment as security until final payment under the supply contract;
- Tax exempt status of EUROFINAIR in its country of incorporation, and exemption from withholding taxes on dividends and interest paid to shareholders and lenders; and
- Exemption from withholding taxes on payments from the airlines to EUROFINAIR under the equipment supply contracts.

This proposal to internationalise finance for European airlines may appear revolutionary, but it is the offspring of an existing and well-proven scheme for the co-operative financing of European railway rolling stock—EUROFIMA (European Company for the Financing of Railway Equipment).

EUROFIMA was established following an international treaty in 1956 as a joint stock company formed in Switzerland whose shares are owned by the railway authorities of 16 European countries. The international treaty arrangements for EUROFIMA exempt it from taxation in Switzerland and exempt dividends to shareholders and the interest on bonds it issues abroad from any Swiss withholding tax.

The treaty arrangements also

recognise EUROFIMA's security ownership of the equipment it supplies to the operating railways; exempt the equipment financing operations of EUROFIMA from any national taxes, import duties or levies which the member governments would not impose on equipment purchased directly by their railway authorities; and oblige member governments to take measures under their exchange controls to ensure transfers of funds for the operations of EUROFIMA. Under the treaty arrangements, each government is also directly liable for or guarantees payment under the contracts by which equipment is supplied to the railways.

EUROFIMA is thus able to marshal long-term equipment finance for European railways at very fine rates, as exemplified by its recent prospectus for the sale of Japanese yen bonds. The prospectus outlined 10 public bond issues by EUROFIMA in various currencies during 1977-1979 for terms of between seven to 15 years at interest rates of from 3.75 per cent to 6.50 per cent. Total borrowings in this manner during the two years were over \$450m in various currencies. During the past decade EUROFIMA has borrowed more than \$1.9bn through such public bond issues.

The financing arrangements which have proved to be so successful for EUROFIMA could be readily adapted for the finance of European airline equipment. A EUROFINAIR system could also provide other significant advantages as well:

- Common ownership of aircraft, spare parts, engines, and other capital goods would facilitate equipment exchanges and pooling arrangements among operating airlines;
- Equipment purchases through EUROFINAIR would reduce the political pressure governments can exert about the "source" of the purchases;
- Aircraft owned by EUROFINAIR would be protected from seizure by non-member governments for political or

other reasons. Diplomatic protection could be asserted not only by the country in which EUROFINAIR is incorporated and by the "flag" state of the aircraft, but also by all other member countries.

EUROFINAIR could assure member airlines of their place in the "queue" in ordering aircraft from manufacturers at current prices by placing the order and taking delivery even before the member airline has a scheduled need for the aircraft. It could lease or charter the aircraft short-term to other operators which have an immediate need for it. Earnings from such short-term leases or charters would reduce the total financing cost to the original airline.

EUROFINAIR could play a part in alleviating the international problems of re-cycling oil revenues: it could offer a long-term, tax-free and internationally guaranteed investment outlet to OPEC countries for their surplus funds. By the purchase of EUROFINAIR securities, OPEC investors would be able to participate in a politically neutral manner in the growth of the European airline industry.

As it was said of EUROFIMA at its birth, this proposal for EUROFINAIR represents the meeting of a compelling fact and a powerful ideal. The fact is that European airlines must spend vast sums for their equipment needs during the next decade; the ideal is European-wide co-operation to solve common problems.

The financiers of the post-war generation, whose efforts were essential in turning the idea of EUROFIMA into reality, have shown what can be done. A consortium of European merchant banks should now demonstrate their skill and taste for innovation by acting to provide the impetus for EUROFINAIR.

The author is an American attorney practising in London as a consultant in United States and international law. This article is based partly on the author's previous work, *Legal Aspects of Aircraft Finance in Europe*.

A FINANCIAL TIMES SURVEY
VIDEO EQUIPMENT

November 12 1980

The Financial Times proposes to publish a Survey on Video Equipment. The provisional editorial synopsis is set out below:

INTRODUCTION The development and manufacture of video equipment, whether for professional and industrial purposes or the home domestic market, has created a major new industry. Its growth is now expected to be spectacular. This Survey will examine some of the developments now taking place.

Editorial coverage will also include:

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FINANCIAL TIMES
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The contents, size and publication dates of Surveys in the Financial Times are subject to change at the discretion of the Editor

APPOINTMENTS

Management changes at Geo. Bassett

GEO. BASSETT HOLDINGS has made the following changes: Mr. D. Clarke, is appointed vice-chairman of the group in a full executive capacity. He will remain chairman of the Geo. Bassett and Co. subsidiary. Mr. G. R. H. Clements, the group finance director, has assumed additional responsibility for strategic planning. Mr. H. B. Stokes, the group industrial relations and personnel director, is appointed managing director of Geo. Bassett and Co. Mr. J. T. Fountain remains managing director of the special foods, leisure and distribution division of the group, and Mr. R. L. Frost and Mr. J. Shanks continue as non-executive directors.

Mr. David A. Dierks has been appointed manager of the Europe/Mid-East/Africa Group of FIRST NATIONAL BANK OF ST. LOUIS, based at the branch in London. He replaces Mr. Richard A. Murray who has been appointed deputy international division manager, a new position in the international department of First National, in St. Louis, Missouri.

Mr. Arnold Brackenridge has been appointed president of TRICENTROL OILS, Calgary, a wholly-owned subsidiary of Tricentrol, UK. In 1978, he set up the Denver Area office in the Rocky Mountain area where he was vice-president and general manager prior to his appointment with Tricentrol.

Mr. Digby N. C. Bedford has been elected to the Board of T. COWIE, the Sunderland-based motor group.

Mr. Bernard Thimont will be retiring from the public service on December 31. He will be succeeded as controller (chief executive) of HER MAJESTY'S STATIONERY OFFICE and as The Queen's Printer of Acts of Parliament by Mr. W. J. Sharp, presently controller of supplies in the property services agency.

THURCAR BARDEX states that in accordance with the arrangements made with BCL, Mr. J. A. Lorenz has been appointed to the Board.

Sir William Vincent has been appointed a director of SAVE AND PROSPER INVESTMENT MANAGEMENT.

AMERICAN MONITOR INTERNATIONAL has appointed Mr. Bernard Johnson as financial director.

man of the Newcastle-upon-Tyne Area Health Authority. He is also chairman of the Newcastle and Gateshead Water Company and vice-chairman of the Newcastle University Council.

PROPERTY PARTNERSHIPS has appointed Mr. Paul Raymond King as chairman of the group in succession to Mr. King's father, Mr. Raymond King, founder of the company, who died on August 13. Mr. Paul Raymond King has been chairman of the group's principal subsidiary, Property Partnerships (Hotels) since its foundation in 1975.

The Earl of Eglinton and Winton, a managing director of GERRARD AND NATIONAL DISCOUNT COMPANY, has been appointed joint deputy chairman.

Mr. John Dickson has been appointed managing director of B.A.T. (UK AND EXPORT). He succeeds Mr. Peter Roberts, who has been appointed to a new position in British American Tobacco's Millbank, London, headquarters as co-ordinator for Brazil, Finland, Switzerland and new opportunity areas.

CCM MARKETING states that Mr. Ian Medley has been appointed production director. Mr. Medley was with Ainge-Woodsmith before it was taken over by CCM.

Mr. Philip B. Parsons has been appointed managing director of the STAINLESS STEEL WIRE COMPANY. Mr. Peter W. Hemmings, former managing director, remains chairman to concentrate on future company development.

Mr. Michael Hughesdon has been appointed a director of LESLIE AND GODWIN INTERNATIONAL.

Mr. John Alan Williams has been appointed a special director of the DUTTON-FORSHAW GROUP. In addition to his group responsibilities for industrial relations and consumer affairs, he will play an active part in administration and marketing.

The Department of Industry has appointed Dr. Robin Nicholson, managing director of Inco Europe, as the chairman of its ENGINEERING MATERIALS REQUIREMENTS BOARD. He succeeds Dr. A. Kelly, vice chancellor of the University of Surrey, who has completed his term of office.

METAL BOX states that when Mr. L. R. M. Willis retires as chairman of the overseas division in July 1982 that he will be succeeded by Mr. P. K. Nanda. Mr. Nanda will become deputy chairman of the overseas division

and member of the main Board of Metal Box during the first half of the financial year 1981-1982. After Mr. Nanda moves to the UK he will remain chairman of Metal Box India for a time.

ARAB INTERNATIONAL TRUST - SA and its wholly-owned subsidiary INTERNATIONAL RESOURCES AND FINANCE BANK SA, Luxembourg, have made the following appointments: Sheikh Hani S. Ezzam has been elected chairman of AIT and IRFB to succeed Mr. Sulaiman Ahmed El Moadad who has retired due to personal reasons but continues as a

CONTRACTS

£4m landing systems

Contracts exceeding £4m have been placed with MEL (division of Philips Electronic and Associated Industries) by the Ministry of Defence (procurement executive) for the supply of MADGE microwave landing systems. The equipment is for installation aboard the anti-submarine cruiser HMS Invincible and further ships of the class and for the aircraft carrier HMS Hermes. They will be used for the recovery of the Royal Navy's Sea Harrier aircraft operating from these vessels.

Glasgow Rangers Football Club has awarded a £3.2m contract to TAYLOR WOODROW CONSTRUCTION (SCOTLAND) to build the new north stand at Ibrox Stadium, Glasgow, to be called the centenary stand. The work includes the demolition of the existing stand and is due for completion towards the end of 1981.

MARCONI AVIONICS, the GEC-Marconi electronics company has been selected by the Royal Danish Air Force, Air Material Command, to supply head-up displays for RDAF 35XD Draken aircraft. With production options, the total value is expected to exceed £3m.

Contracts totalling over £2.3m have gone to SHEPHERD CONSTRUCTION to build major extensions to two of York's leading hotels, the Viking Hotel and the Post House, both of which were built originally by Shepherd Construction. Worth more than £1.5m, the contract with Grand Metropolitan Hotels to extend the Viking Hotel, North Street, York, is scheduled for completion in February 1981. Work has started on what will be a five-storey, 72-bedroom extension to the existing hotel, to include a car park and carvery restaurant. The extension block to the Post House Hotel, Tadcaster Road,

York, for Trusthouse Forte Hotels will provide 43 additional bedrooms and is worth around £775,000. To be completed in April 1981, the three-storey extension will incorporate two additional meeting rooms.

Mr. Neil Davis and Mr. Harold Palmer have joined the Board of ESTATES AND AGENCY HOLDINGS.

SELISLE FILTRATION has appointed Mr. James Bentley, sales director.

LINK ELECTRONICS, Andover, has been awarded a £800,000 contract extension by the BBC to build two more colour mobile control rooms, bringing the total to 10. The two units will round off the BBC's replacement programme for major outside broadcast vehicles. The two vehicles, to be coachbuilt by Link's associate company, Locomotors, of Andover, will weigh 18 tons, and be the maximum permitted size for the road. They will have eight cameras each.

An order to supply a specially designed unit worth £200,000 has been won by ROBERT JENKINS OIL AND GAS, Rotherham, for a North Sea oil platform in the Marathon-Brae oil field. Marathon Oil UK has ordered a skid-mounted glycol regeneration unit utilising hot oil as the heating medium.

JT GROUP has ordered an NCR I-8450 computer worth £115,000 to take over and expand processing currently handled by an NCR I-350. The computer will take on accounting and contract costing applications and a new membership records system, which will handle records of the 25,000 members of JT Group's residential country clubs in the south west.

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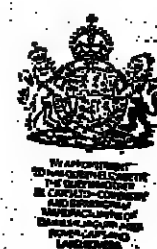
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(PLEASE REFER TO PAGE 21)

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Companies and Markets

COMMODITIES AND AGRICULTURE

EEC sugar yields improve

By Our Commodities Staff

LATEST TEST results indicate that European sugar production this year could be significantly higher than forecast earlier.

Brighter, warmer weather has allowed sugar beet crops to recover much of the ground they lost during the dull, damp early summer and yields in France, Europe's biggest producer, now look like beating last year's.

Following its third test, the French Beet Planters' Association announced yesterday that average root weight had risen to 463 grammes on September 1 from 404 grammes on August 15. With sugar content up to 15.16 per cent from 13.12 per cent the association put sugar per hectare at 6.52 tonnes, up from 4.51 tonnes on August 15 and 5.84 tonnes at the same stage last year.

In Bonn meanwhile the West German Sugar Industry Association published figures putting sugar per hectare at 6.04 tonnes on September 5. This was still below the 6.71 tonnes registered at the same time last year but was well up on the previous week's 5.27 tonnes.

Average beet weight was 586 grammes compared with a year earlier and sugar content was 14.4 per cent against 15 per cent. But the average number of beet per hectare was 71,700 compared with 70,200.

Alcohol plant start-up

ASCUNCION, Paraguay — An \$18m plant built by the Paraguayan Government to process sugar cane into alcohol will go into production at the end of this month.

The plant will have a daily output capacity of 40,000 litres of alcohol which will be mixed with gasoline to fuel vehicles as part of a drive to reduce fuel imports.

Record crop of Chinese flax

PEKING — The north eastern province of Heilongjiang, China's biggest flax producing area, had a record harvest of 138,000 tonnes of flax this year, more than double last year's output, the New China News Agency said.

More than 84,000 hectares were planted this year, an increase of 32,000 hectares.

Silver surge follows gold

By JOHN EDWARDS, COMMODITIES EDITOR

SILVER, and gold, stole the limelight on the London metal markets yesterday. Silver in particular surged upwards. On the London bullion market the spot quotation was raised at the morning fixing by 43.7p to 748.25 a troy ounce. The market continued to move ahead and the LME cash price closed at 784p, up 69.5p on Friday's close.

Dealers said there was no specific reason for the sudden surge of buying interest. The main influence is the rise in gold, which has reacted to forecasts of a possible Saudi Arabian oil price increase and production cutback which it is feared might result in renewed inflation.

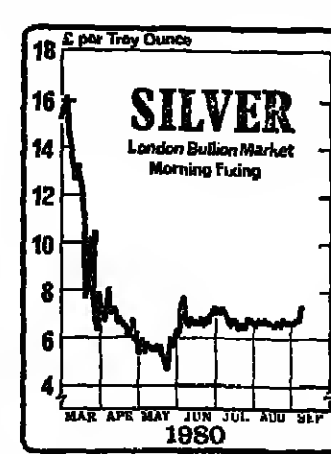
Accelerating the upward trend was the breakthrough of "buy" chart points that brought in more speculators and covering of previous sales by the trade. It is noted that as the summer somewhat apprehensive of remaining "short" bearing in mind the experience suffered during the silver boom earlier this year when a squeeze of available supplies was a prime factor in forcing

prices up. The shadow of Bunker Hunt still hangs over the market.

The rise in gold and silver also boosted base metals, bringing a general lift in values on the London Metal Exchange.

Copper cash wirebars closed at \$3.50 a lb, up 1.5p. This was in spite of reports from the U.S. that Kennecott and the copper workers unions had resolved the remaining issues holding up settlement of new labour contracts and the pressure that the company would be back in operation within a few days.

Other producers, however, appear to be making heavy weather of their negotiations with the unions. In spite of the pressure exerted by the agreement reached with Kennecott, the largest U.S. producer, slow progress is being made by other companies. Anaconda and Asarco are believed to have broken off negotiations for the time being while Phelps Dodge, Amstar and Newmont Mining are still talking. As Amalgamated Metal Trading underlines in their latest market report, the loss of production has been considerable, at around 300,000 tonnes.



The firm tone in the market was reflected by two U.S. producers raising their domestic copper selling prices by 3 cents to 85 cents a lb. London, therefore, was in a mood to ignore a small rise in warehouse stocks, up by 350 to 119,975 tonnes. Dealers also ignored unexpected rises in tin stocks, up by 220 to 3,705 tonnes and lead by 1,235 to 53,700 tonnes. Indeed tin values jumped on renewed buying interest, mainly from chartists, and the cash price closed \$127.5 higher at \$7,230 a tonne. Cash lead galvanized \$12.5 to \$371.5 a tonne.

Aluminium and zinc prices were higher too, although aluminium stocks rose by 7,000 tonnes to 23,650 tonnes and zinc by 575 to 60,700 tonnes. Nickel fell by 234 to 5,070 tonnes, but LME silver bid values increased by 40,000 to 26,270,000 ounces.

China signs Argentine wheat deal

By SARA DAVIES

ARGENTINA has reached an agreement with China to sell China 200,000 tonnes of wheat for delivery this year.

David Lacroze, president of the Argentine Grain Board said that the wheat, which will come from Grain Board stocks, should bring Chinese wheat purchases this year to about 800,000 tonnes. This was in line with an agreement expiring in January for China to take up to 1m tonnes of Argentine maize or wheat annually.

Argentina expects this season's harvest to be 10 to 12 per cent higher than that of 1979-80, which yielded 7.7m tonnes from 4.5m hectares. Wheat plantings now under way will total 5.5m hectares next season, according to preliminary estimates by the Argentine National Agricultural Secretariat.

Jorge Zorreguieta, Agriculture Secretary has said that Argentina has placed nearly all the 1980-81 exportable wheat

surplus of 4.5m tonnes. "China and Iraq will buy a total of 1m tonnes of wheat this season, and supply to traditional markets — Chile, Bolivia, Peru, Paraguay and Brazil — will be maintained," he said.

But in Peking, Canada's Agriculture Minister Eugene Whelan, in China to sign a memorandum for joint agricultural co-operation, said there was no indication that China would increase its grain imports this year as a result of bad weather.

Drought in the north and floods in southern areas of China had caused "substantial" crop losses, he said. The Chinese themselves had not yet assessed their own losses.

Meanwhile in Canada itself reports indicate that harvesting on the prairies has been seriously handicapped by too much rain. Bad weather has delayed harvesting in Alberta and Saskatchewan, where yields are expected to average 30 bushels an acre for wheat, 38 for oats and 34 for barley.

EEC accused of protectionism

Latin American and Caribbean countries have condemned the EEC for maintaining protectionist agricultural policies.

In a resolution adopted at the end of a six-day regional conference of the UN food and agriculture organisation in Havana, the urged governments to present a firm united position against possible

unfavourable effects of a proposed enlargement of the EEC to include Greece, Portugal, Spain and Turkey.

The conference also resolved to create a regional centre for agrarian reform and rural development, but no country was chosen for its headquarters.

Slow start to cocoa pact talks

By Our Commodities Editor

THE INTERNATIONAL Cocoa Council meeting in London, which may decide the future of the International Cocoa Agreement, got off to a slow start yesterday. It was immediately adjourned at the request of producing countries so they could discuss their negotiating position and the agenda.

The meeting was originally scheduled to last for only one day—mainly to approve a proposal that a negotiating conference seeding a new Agreement should be held next month. But it has now been extended to last for three days at the insistence of Brazil.

It is feared that Brazil might press for an early liquidation of the 1970 cocoa stockpiles and even of their independence. The simple problem is that these small countries have to learn not only how to catch fish but also how to deal with the "sharks"—the big factory fleets and the ambitious big powers prowling the Pacific waters with greedy hopes.

Colombia plea to U.S. on coffee

By Our Commodities Staff

COLOMBIAN AND U.S. officials are to meet in Washington today to discuss the implementation of a quota system for coffee imports and exports with the aim of stabilising the world market.

A sustained decline took world coffee prices to their lowest levels for nearly four years since recovered a little but are still nearly 500 below the peak level reached in early June. The low prices have caused serious problems for growing countries, many of whom depend heavily on coffee exports for foreign exchange.

The Colombian delegation is to be headed by Sr. Arturo Gomez Jaramilla, manager of the country's Coffee Growers Federation. It will meet U.S. State Department officials for preliminary talks on the International Coffee Organisation (ICO) annual meeting in London later this month.

The ICO administers the International Coffee Agreement under which quotas can be imposed with the agreement of member countries.

MARINE RESOURCES

New horizons for Pacific fishermen

By KEVIN RAFFERTY

EXPANSION TO 200 miles of the coastal limits round countries has given new economic opportunities to the world's "toddler" states, the islands of the Pacific Ocean.

As technology advances they may hope to enjoy the mineral riches of the sea-bed within their territorial jurisdiction. But more immediately and more basic, commodity-fish provides their opportunity and their challenge.

How they handle the fish may provide the biggest test of their nationhood and integrity and even of their independence. The simple problem is that these small countries have to learn not only how to catch fish but also how to deal with the "sharks"—the big factory fleets and the ambitious big powers prowling the Pacific waters with greedy hopes.

Second scramble

A number of officials of the Pacific countries longed for activity which they fear may be the opening shots in what Mr. A. V. Hughes, secretary to the finance ministry in the Solomon Islands, calls "the second scramble for the Pacific".

With the independence at the end of July of Vanuatu (formerly the New Hebrides) the number of independent or self-governing Pacific states has risen to double figures. Their populations range from 600,000 to 220,000 in the Solomons to a few thousand each on Nauru, Tuvalu and Niue.

Just how much difference the extension of the territorial waters to 200 miles has made can be seen by looking at the sea area of the countries in relation to their land area. Overall the countries of the South Pacific Commission, Papua New Guinea excluded, have sea jurisdiction 286 times their land area. In the case of the Pacific Islands, still a British dependency, the sea area is 160,000 times the size of the five square miles of land that is the island. Among the independent states, Tuvalu (formerly the Ellice Islands) has a sea area 34,615 times its land mass, the Solomons have compara-

tively the smallest sea area, only 47 times their land mass.

In country after country the economic profile of the Pacific islands reads simply subsistence farming and fishing. Nature of course makes it the richest country in the world in per capita terms. Fiji has sugar and coconuts, and the Solomons have some coconut plantations. But generally the land offers a poor livelihood.

Traditionally, too, fishing has only been subsistence. The coastal resources of the small islands are mostly those of tropical reef or lagoon environments. They barter a diversity of marine organisms including fish, crustaceans and molluscs. But the relative productivity of marketable fish and sea foods is small because the areas are not suitable for trawling and there are seldom enough pelagic waters close to the shore (non-bottom) fishing species vulnerable to seine netting. In addition the small fishing boats are often at the mercy of the weather and vessels cannot work for long periods of the year.

Even outside the immediate coastline there is little continental shelf and the smallest of the land mass means that there is little run-off to enrich the immediate waters. But with the 200-mile jurisdiction the wider sea waters provide chances for developing proper fishing industries.

The offshore fish catch within the 200-mile territorial waters is about four times the size of the total local fish catch by the Pacific Island states. More than 90 per cent of the 100,000 tonnes out of 200,000 tonnes in 1976, according to Pacific Commission research estimates—is tuna.

So the fish already exist and are being caught and marketed; one question for the Pacific islands is how to get their share of the fishing industry.

Since the tuna is a highly migratory species there are large seasonal fluctuations in the numbers of fish within any one 200 mile zone. Co-operation between states on a broad regional basis would be a good way of ironing out the fluctuations in a fleet's fishing season. Co-operation could also be important in building and main-

taining a fishing fleet. It is expensive to build and operate a fishing fleet. An average 100-tonne pole-and-line or longline vessel used in the distant waters of the central and western Pacific costs more than \$1m to build and about \$1 a year to run. An average U.S. tuna purse seine trawler of 1,000 tonnes costs \$6m to build and \$2m a year to operate.

But the biggest need is to catch enough fish to keep the fleet at sea economically. To sustain a viable fleet it is necessary to catch about 8,000 tonnes of tuna a year, which would mean having at least 10 boats. Most of the small states would not have enough fishermen, let alone the technical or management teams, to support such a fleet on their own. Also, if a live-bait fishing fleet is to catch 8,000 tonnes a year it needs 240 tonnes of bait catches—which again is more than the total fish catch of the small islands.

If fishing is to develop some processing is also necessary. One reason is that if fish is exported out of a frozen state freight costs are more than \$200 a tonne, high enough to threaten the whole viability of the fishing. But a tuna cannery needs annual production of between 10,000 to 15,000 tonnes of fish to make it economic, plus water and power supplies which are beyond many of the Pacific States on their own.

Co-operation

So the message is that the Pacific States must combine and co-operate. Even if they do not want to licence the big foreign operators there is an advantage in having a common pooling policy. Otherwise the bigger and richer foreigners play one State against another.

The need to sort out the fishing industry may not seem important but it is a case of the Pacific Islands control of other and more important commodities in their territorial waters. Unless the islands can work together they may find they have shrugged off one kind of colonial dependence only to swim into the jaws of sharks.

BRITISH COMMODITY MARKETS

BASE METALS

COPPER—Gained ground on the London Metal Exchange following the gains in silver and gold. After opening at £260.00, it rose to £265.00, and touched the day's high of £275.00 before settling at £270.00. Forward metal was £275.00, and three months £275.00. Tin was £2,200.00, and three months £2,200.00. Zinc was £2,200.00, and three months £2,200.00.

COPPER	a.m. Official	+ or -	p.m. Unofficial	+ or -
	£.	£	£	£
Wirebars				
Cash.	843-3.0	+10	849-80	+8.5
5 months	866-5.5	+11.5	270.5-1.5	+2.5
Settle'm't	843-5	+10	—	—
Cathodes				
Cash.	818-9	+14.5	820-1	+6.5
3 months	238-40	+11	843-6	+75.5
Settle'm't	619	+74	—	—
U.S. Prod			*87.5-86.25	—

**AUTHORISED
UNIT
TRUSTS**

[illegible][illegible]

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[illegible]

222 Edinburgh, E2,2.	Prov. Managed Fd.	148.8	156.7
	Equity Fd. Acc.	138.6	144.7
	G.M. Fund	134.2	141.7	+0.6
	Fixed Int. Fd.	129.4	136.3
	Real Estate Fd.	124.6	131.5
	For. Inv. Fund	113.3	119.3
Prudential Pensions Limited				
Holborn Bars, EC1N 2HN.			01-405 7222	
Prov. Fd. Acc.	138.6	144.7	
Fixed Int. Aug. 20	135.7	142.5	
Prop. Fd. Aug. 20	129.7	136.5	
		40.50	
Refinance Mutual				
100, Strand, W.C.2			0892 2227	
Reg. Comp. No.	292.3	-	-	
Wethershead Asset Management				
31, Southwark Lane, London EC4			01-426 435	
N.C.P. Reg.	156.2	-	-	
Next stat. period Sept.	160.2	15	-	
78 Royal Insurance Group				
New Nat Plancy, Liverpool			051-227 462	
Royal Ship Fd. Group	139.0	139.9	
Save & Prosper Group				
41, Abchurch Lane, EC4N 3EP.			01-554 88	
Reg. Inv. Fd.	129.6	144.9	+0.4	
Prov. Fd. Acc.	124.7	131.7	
G.M. Fund	121.3	128.4	+0.3	
Deposit Fd.	117.9	125.0	
Equity Fd. Acc.	114.5	121.6	
Fixed Int. Fd.	111.1	118.2	
G.M. Pen. Fd.	107.7	114.8	
G.M. Pen. Fd.	104.3	111.4	
Depos. Pen. Fd.	100.9	108.0	
			Prices as at Aug. 27	
			Twenty Dealings.	
Schrader Life Group				
Enterprise House, Portsmouth			0705 2177	
Employ. Fd.	125.4	132.5	
Managed	120.0	127.1	
Property	115.6	122.7	
Fixed Int.	111.2	118.3	
CCIM Managed	106.8	113.9	
CCIM Property	102.4	109.5	
Income Invest.	98.0	105.1	
S. Pen. Cap.	93.6	100.7	
Equity Pension Acc.	89.2	96.3	
Fixed Int. Pension	84.8	91.9	
Inc. Pen. Acc.	80.4	87.5	
Inc. Pen. Acc.	76.0	83.1	
Inc. Pen. Acc.	71.6	78.7	
Prop. Pen. Fd.	67.2	74.3	
Prop. Pen. Fd.	62.8	69.9	
			Prices as at Sept. 2	
			Other prices on request.	
Scottish Widows' Group				
PO Box 902, Edinburgh EH2 2Z.			031-659 600	
Inv. Plr. Sect. 2	115.7	122.8	
Inv. Plr. Sect. 3	111.3	118.4	
Inv. Cash Sect.	106.9	114.0	
Inv. Cash Sect.	102.5	109.6	
U. Inv. Sect.	98.1	105.2	
U. Inv. Sect.	93.7	100.8	
Pen. Man. Sect. 3	89.3	96.4	
Skandia Life Assurance Co. Ltd.				
100, Abchurch Lane, London EC4 3EP.			031-385 85	
Managed Acc.	120.3	127.4	+0.2	
Equity Acc.	115.9	123.0	
Fixed Int. Acc.	111.5	118.6	
Prop. Managed Acc.	107.1	114.2	
			For prices of older units and some special	
			investments, please apply to the Company.	
For Solay Life Assurance Ltd.				
see Sun Life Assurance Ltd.				
Standard Life Assurance Company				
3 George St., Edinburgh EH2 2Z.			031-225 77	
Equity	125.4	132.5	
Property	121.0	128.1	
Fixed Int.	116.6	123.7	
International	112.2	119.3	
Pension Managed	107.8	114.9	
Managed	103.4	110.5	
Pension Equity	99.0	106.1	
Pension Int.	94.6	101.7	
Pension Cash	90.2	97.3	
Sun Alliance Fund Mgmt. Ltd.				
Sun Alliance House, London EC2A 2DZ.			0403 640	
Prov. Fd. Acc.	138.6	144.7	
Fixed Int. Fd.	134.2	141.3	
Prop. Fd. Acc.	129.8	136.9	
			01-405 7222	
Sun Alliance Linked Life (Ins. Ltd.)				
Sun Alliance House, Hortham.			0403 640	
Prov. Fd. Acc.	138.6	144.7	
Fixed Int. Fd.	134.2	141.3	
Prop. Fd. Acc.	129.8	136.9	
Fixed Int. Fd.	125.4	132.5	
Prop. Fd. Acc.	121.0	128.1	
Fixed Int. Fd.	116.6	123.7	
International	112.2	119.3	
Pension Managed	107.8	114.9	
Managed	103.4	110.5	
Pension Equity	99.0	106.1	
Pension Int.	94.6	101.7	
Pension Cash	90.2	97.3	
Sun Life of Canada (UK) Ltd.				
2, 3, 4, Colclough St., SW1V 5HN			01-930 50	
Managed Acc.	120.3	127.4	+0.2	
Equity Acc.	115.9	123.0	
Fixed Int. Acc.	111.5	118.6	
Prop. Managed Acc.	107.1	114.2	
			For prices of older units and some special	
			investments, please apply to the Company.	
Sun Life of Canada (UK) Ltd.				
2, 3, 4, Colclough St., SW1V 5HN			01-930 50	
Managed Acc.	120.3	127.4	+0.2	
Equity Acc.	115.9	123.0	
Fixed Int. Acc.	111.5	118.6	
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2, 3, 4, Colclough St., SW1V 5HN			01-930 50	
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Equity Acc.	115.9	123.0	
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			For prices of older units and some special	
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Sun Life of Canada (UK) Ltd.				
2, 3, 4, Colclough St., SW1V 5HN				

[illegible]

OFFSHORE & OVERSEAS FUNDS

[illegible]

INSURANCE PROPERTY BONDS

[illegible]

You'll find our name in all the prominent places

Monk

National Building and Civil Engineering Contractors
Head Office: P.O. Box 43, Warrington, Cheshire

BRITISH FUNDS

"Shorts" (Lives up to Five Years)

High	Low	Stock	Price	+/-	Yield	Vol.
100.00	99.50	Exch. 12/20/1980	99.50	-0.50	13.52	15.82
99.50	99.00	Exch. 12/20/1980	99.00	-0.50	13.52	15.82
99.00	98.50	Exch. 12/20/1980	98.50	-0.50	13.52	15.82
98.50	98.00	Exch. 12/20/1980	98.00	-0.50	13.52	15.82
98.00	97.50	Exch. 12/20/1980	97.50	-0.50	13.52	15.82
97.50	97.00	Exch. 12/20/1980	97.00	-0.50	13.52	15.82
97.00	96.50	Exch. 12/20/1980	96.50	-0.50	13.52	15.82
96.50	96.00	Exch. 12/20/1980	96.00	-0.50	13.52	15.82
96.00	95.50	Exch. 12/20/1980	95.50	-0.50	13.52	15.82
95.50	95.00	Exch. 12/20/1980	95.00	-0.50	13.52	15.82
95.00	94.50	Exch. 12/20/1980	94.50	-0.50	13.52	15.82
94.50	94.00	Exch. 12/20/1980	94.00	-0.50	13.52	15.82
94.00	93.50	Exch. 12/20/1980	93.50	-0.50	13.52	15.82
93.50	93.00	Exch. 12/20/1980	93.00	-0.50	13.52	15.82
93.00	92.50	Exch. 12/20/1980	92.50	-0.50	13.52	15.82
92.50	92.00	Exch. 12/20/1980	92.00	-0.50	13.52	15.82
92.00	91.50	Exch. 12/20/1980	91.50	-0.50	13.52	15.82
91.50	91.00	Exch. 12/20/1980	91.00	-0.50	13.52	15.82
91.00	90.50	Exch. 12/20/1980	90.50	-0.50	13.52	15.82
90.50	90.00	Exch. 12/20/1980	90.00	-0.50	13.52	15.82
90.00	89.50	Exch. 12/20/1980	89.50	-0.50	13.52	15.82
89.50	89.00	Exch. 12/20/1980	89.00	-0.50	13.52	15.82
89.00	88.50	Exch. 12/20/1980	88.50	-0.50	13.52	15.82
88.50	88.00	Exch. 12/20/1980	88.00	-0.50	13.52	15.82
88.00	87.50	Exch. 12/20/1980	87.50	-0.50	13.52	15.82
87.50	87.00	Exch. 12/20/1980	87.00	-0.50	13.52	15.82
87.00	86.50	Exch. 12/20/1980	86.50	-0.50	13.52	15.82
86.50	86.00	Exch. 12/20/1980	86.00	-0.50	13.52	15.82
86.00	85.50	Exch. 12/20/1980	85.50	-0.50	13.52	15.82
85.50	85.00	Exch. 12/20/1980	85.00	-0.50	13.52	15.82
85.00	84.50	Exch. 12/20/1980	84.50	-0.50	13.52	15.82
84.50	84.00	Exch. 12/20/1980	84.00	-0.50	13.52	15.82
84.00	83.50	Exch. 12/20/1980	83.50	-0.50	13.52	15.82
83.50	83.00	Exch. 12/20/1980	83.00	-0.50	13.52	15.82
83.00	82.50	Exch. 12/20/1980	82.50	-0.50	13.52	15.82
82.50	82.00	Exch. 12/20/1980	82.00	-0.50	13.52	15.82
82.00	81.50	Exch. 12/20/1980	81.50	-0.50	13.52	15.82
81.50	81.00	Exch. 12/20/1980	81.00	-0.50	13.52	15.82
81.00	80.50	Exch. 12/20/1980	80.50	-0.50	13.52	15.82
80.50	80.00	Exch. 12/20/1980	80.00	-0.50	13.52	15.82
80.00	79.50	Exch. 12/20/1980	79.50	-0.50	13.52	15.82
79.50	79.00	Exch. 12/20/1980	79.00	-0.50	13.52	15.82
79.00	78.50	Exch. 12/20/1980	78.50	-0.50	13.52	15.82
78.50	78.00	Exch. 12/20/1980	78.00	-0.50	13.52	15.82
78.00	77.50	Exch. 12/20/1980	77.50	-0.50	13.52	15.82
77.50	77.00	Exch. 12/20/1980	77.00	-0.50	13.52	15.82
77.00	76.50	Exch. 12/20/1980	76.50	-0.50	13.52	15.82
76.50	76.00	Exch. 12/20/1980	76.00	-0.50	13.52	15.82
76.00	75.50	Exch. 12/20/1980	75.50	-0.50	13.52	15.82
75.50	75.00	Exch. 12/20/1980	75.00	-0.50	13.52	15.82
75.00	74.50	Exch. 12/20/1980	74.50	-0.50	13.52	15.82
74.50	74.00	Exch. 12/20/1980	74.00	-0.50	13.52	15.82
74.00	73.50	Exch. 12/20/1980	73.50	-0.50	13.52	15.82
73.50	73.00	Exch. 12/20/1980	73.00	-0.50	13.52	15.82
73.00	72.50	Exch. 12/20/1980	72.50	-0.50	13.52	15.82
72.50	72.00	Exch. 12/20/1980	72.00	-0.50	13.52	15.82
72.00	71.50	Exch. 12/20/1980	71.50	-0.50	13.52	15.82
71.50	71.00	Exch. 12/20/1980	71.00	-0.50	13.52	15.82
71.00	70.50	Exch. 12/20/1980	70.50	-0.50	13.52	15.82
70.50	70.00	Exch. 12/20/1980	70.00	-0.50	13.52	15.82
70.00	69.50	Exch. 12/20/1980	69.50	-0.50	13.52	15.82
69.50	69.00	Exch. 12/20/1980	69.00	-0.50	13.52	15.82
69.00	68.50	Exch. 12/20/1980	68.50	-0.50	13.52	15.82
68.50	68.00	Exch. 12/20/1980	68.00	-0.50	13.52	15.82
68.00	67.50	Exch. 12/20/1980	67.50	-0.50	13.52	15.82
67.50	67.00	Exch. 12/20/1980	67.00	-0.50	13.52	15.82
67.00	66.50	Exch. 12/20/1980	66.50	-0.50	13.52	15.82
66.50	66.00	Exch. 12/20/1980	66.00	-0.50	13.52	15.82
66.00	65.50	Exch. 12/20/1980	65.50	-0.50	13.52	15.82
65.50	65.00	Exch. 12/20/1980	65.00	-0.50	13.52	15.82
65.00	64.50	Exch. 12/20/1980	64.50	-0.50	13.52	15.82
64.50	64.00	Exch. 12/20/1980	64.00	-0.50	13.52	15.82
64.00	63.50	Exch. 12/20/1980	63.50	-0.50	13.52	15.82
63.50	63.00	Exch. 12/20/1980	63.00	-0.50	13.52	15.82
63.00	62.50	Exch. 12/20/1980	62.50	-0.50	13.52	15.82
62.50	62.00	Exch. 12/20/1980	62.00	-0.50	13.52	15.82
62.00	61.50	Exch. 12/20/1980	61.50	-0.50	13.52	15.82
61.50	61.00	Exch. 12/20/1980	61.00	-0.50	13.52	15.82
61.00	60.50	Exch. 12/20/1980	60.50	-0.50	13.52	15.82
60.50	60.00	Exch. 12/20/1980	60.00	-0.50	13.52	15.82
60.00	59.50	Exch. 12/20/1980	59.50	-0.50	13.52	15.82
59.50	59.00	Exch. 12/20/1980	59.00	-0.50	13.52	15.82
59.00	58.50	Exch. 12/20/1980	58.50	-0.50	13.52	15.82
58.50	58.00	Exch. 12/20/1980	58.00	-0.50	13.52	15.82
58.00	57.50	Exch. 12/20/1980	57.50	-0.50	13.52	15.82
57.50	57.00	Exch. 12/20/1980	57.00	-0.50	13.52	15.82
57.00	56.50	Exch. 12/20/1980	56.50	-0.50	13.52	15.82
56.50	56.00	Exch. 12/20/1980	56.00	-0.50	13.52	15.82
56.00	55.50	Exch. 12/20/1980	55.50	-0.50	13.52	15.82
55.50	55.00	Exch. 12/20/1980	55.00	-0.50	13.52	15.82
55.00	54.50	Exch. 12/20/1980	54.50	-0.50	13.52	15.82
54.50	54.00	Exch. 12/20/1980	54.00	-0.50	13.52	15.82
54.00	53.50	Exch. 12/20/1980	53.50	-0.50	13.52	15.82
53.50	53.00	Exch. 12/20/1980	53.00	-0.50	13.52	15.82
53.00	52.50	Exch. 12/20/1980	52.50	-0.50	13.52	15.82
52.50	52.00	Exch. 12/20/1980	52.00	-0.50	13.52	15.82
52.00	51.50	Exch. 12/20/1980	51.50	-0.50	13.52	15.82
51.50	51.00	Exch. 12/20/1980	51.00	-0.50	13.52	15.82
51.00	50.50	Exch. 12/20/1980	50.50	-0.50	13.52	15.82
50.50	50.00	Exch. 12/20/1980	50.00	-0.50	13.52	15.82
50.00	49.50	Exch. 12/20/1980	49.50	-0.50	13.52	15.82
49.50	49.00	Exch. 12/20/1980	49.00	-0.50	13.52	15.82
49.00	48.50	Exch. 12/20/1980	48.50	-0.50	13.52	15.82
48.50	48.00	Exch. 12/20/1980	48.00	-0.50	13.52	15.82
48.00	47.50	Exch. 12/20/1980	47.50	-0.50	13.52	15.82
47.50	47.00	Exch. 12/20/1980	47.00	-0.50	13.52	15.82
47.00	46.50	Exch. 12/20/1980	46.50	-0.50	13.52	15.82
46.50	46.00	Exch. 12/20/1980	46.00	-0.50	13.52	15.82
46.00	45.50	Exch. 12/20/1980	45.50	-0.50	13.52	15.82
45.50	45.00	Exch. 12/20/1980	45.00	-0.50	13.52	15.82
45.00	44.50	Exch. 12/20/1980	44.50	-0.50	13.52	15.82
44.50	44.00	Exch. 12/20/1980	44.00	-0.50	13.52	15.82
44.00	43.50	Exch. 12/20/1980	43.50	-0.50	13.52	15.82
43.50	43.00	Exch. 12/20/1980	43.00	-0.50	13.52	15.82
43.00	42.50	Exch. 12/20/1980	42.50	-0.50	13.52	15.82
42.50	42.00	Exch. 12/20/1980	42.00	-0.50	13.52	15.82
42.00	41.50	Exch. 12/20/1980	41.50	-0.50	13.52	15.82
41.50	41.00	Exch. 12/20/1980	41.00	-0.50	13.52	15.82
41.00	40.50	Exch. 12/20/1980	40.50	-0.50	13.52	15.82
40.50	40.00	Exch. 12/20/1980	40.00	-0.50	13.52	15.82
40.00	39.50	Exch. 12/20/1980	39.50	-0.50	13.52	15.82
39.50	39.00	Exch. 12/20/1980	39.00	-0.50	13.52	15.82
39.00	38.50	Exch. 12/20/1980	38.50	-0.50	13.52	15.82
38.50	38.00	Exch. 12/20/1980	38.00	-0.50	13.52	15.82
38.00	37.50	Exch. 12/20/1980	37.50	-0.50	13.52	15.82
37.50	37.00	Exch. 12/20/1980	37.00	-0.50	13.52	15.82
37.00	36.50	Exch. 12/20/1980	36.50	-0.50	13.52	15.82
36.50	36.00	Exch. 12/20/1980	36.00	-0.50	13.52	15.82
36.00	35.50	Exch. 12/20/1980	35.50	-0.50	13.52	15.82
35.50	35.00	Exch. 12/20/1980	35.00	-0.50	13.52	15.82
35.00	34.50	Exch. 12/20/1980	34.50	-0.50	13.52	15.82
34.50	34.00	Exch. 12/20/1980	34.00	-0.50	13.52	15.82
34.00	33.50	Exch. 12/20/1980	33.50	-0.50	13.52	15.82
33.50	33.00	Exch. 12/20/1980	33.00	-0.50	13.52	15.82
33.00	32.50	Exch. 12/20/1980	32.50	-0.50	13.52	15.82
32.50	32.00	Exch. 12/20/1980	32.00	-0.50	13.52	15.82
32.00	31.50	Exch. 12/20/1980	31.50	-0.50	13.52	15.82
31.50	31.00	Exch. 12/20/1980	31.00	-0.50	13.52	15.82
31.00	30.50	Exch. 12/20/1980	30.50	-0.50	13.52	15.82
30.50	30.00	Exch. 12/20/1980	30.00	-0.50	13.52	15.82
30.00	29.50	Exch. 12/20/1980	29.50	-0.50	13.52	15.82
29.50	29.00	Exch. 12/20/1980	29.00	-0.50	13.52	15.82
29.00	28.50	Exch. 12/20/1980	28.50	-0.50</		

1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
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[illegible]

9.0	Harvey Sider	15	U.S.T.	15	Contra
14.3	House of Fraser	15	U.O.T.	15	Po T. Zinc
14.9					
4.9					
3.9					

A selection of Options traded is given on the
London Stock Exchange Report page

"Recent Issues" and "Rights" Page

210.0	
7.81	
5.19	
218	

This service is available to every Company dealt in
Financials throughout the United Kingdom for a

